diesel power

MAY 1960

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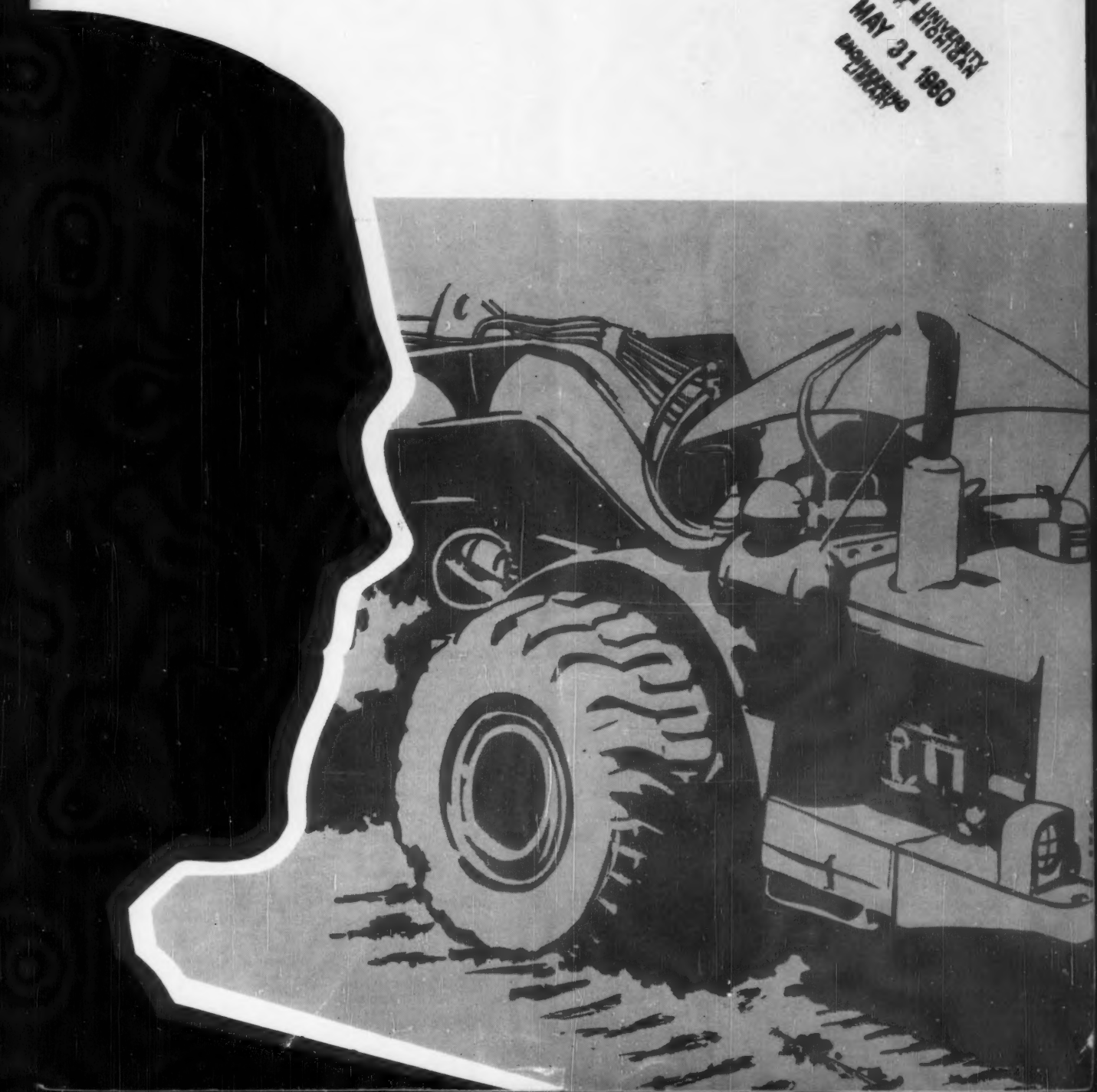

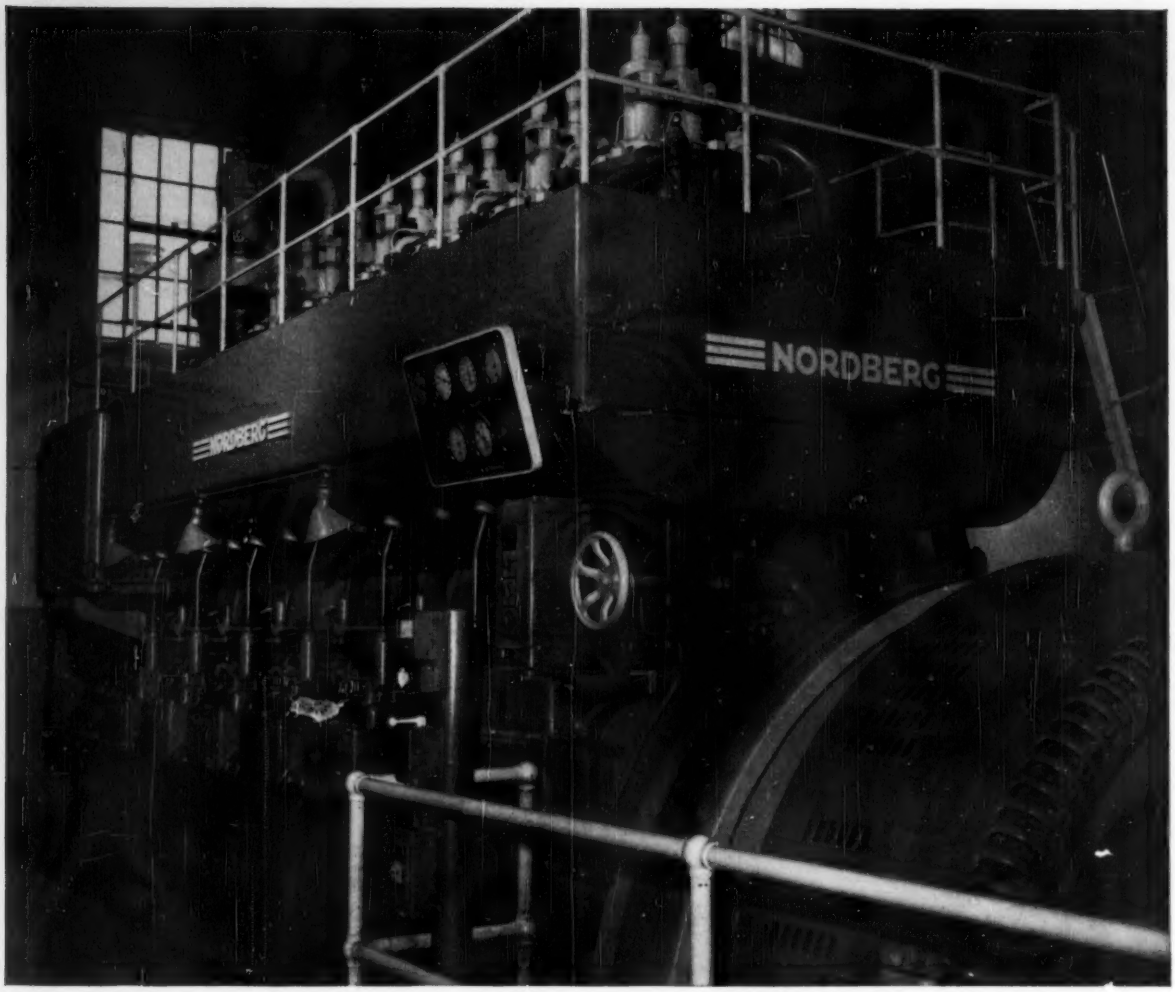

Get these positive benefits with Texaco Ursa Oils

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Texaco Ursa Oil prevents harmful deposits in diesel, gas and dual-fuel engines. Because it keeps rings and valves free and clean you get *full* compression and *complete* combustion. This means longer periods between overhauls as well as more power for your fuel dollar.

There is a complete line of Texaco Ursa Oils to meet the requirements of every make and model of diesel, gas and dual-fuel engine. Your Texaco Lubrication Engineer will be glad to suggest the one designed to keep your power output up, and maintenance costs at a minimum.

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LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

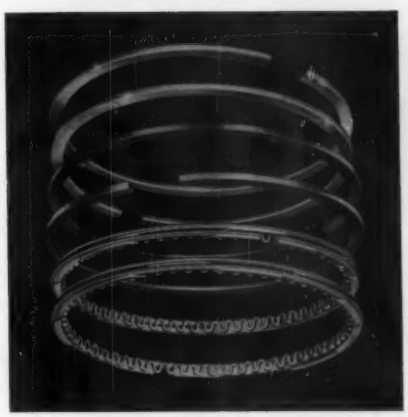
(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

SUCCESS DEPENDS ON "TEAMWORK"

Teamwork is essential to success in baseball. For the most successful performance, the various piston rings on any particular piston also must work together as a "team." Properly selected, the best combination of rings will control blow-by, lubricate effectively without oil waste, seal compression and provide full power and long life.

This kind of piston-ring "team work" is what you get when you use Pedrick Engineered Sets. Backed by 40 years' experience in engineering correct combinations of rings for particular engines, Pedrick Engineered Sets, in single-cylinder units for big-bore engines, offer the very best performance which can be obtained with the very latest development in ring designs. Engineered Sets also simplify handling, ordering and inventory.

For engineered sets or open-stock rings, or for help on special problems, you can depend on the best from PEDRICK. Write, wire or phone: WILKENING MANUFACTURING CO., Philadelphia 42, Pa. Saratoga 9-3770. *In Canada:* Wilkening Manufacturing Co. (Canada) Ltd., Toronto 2.

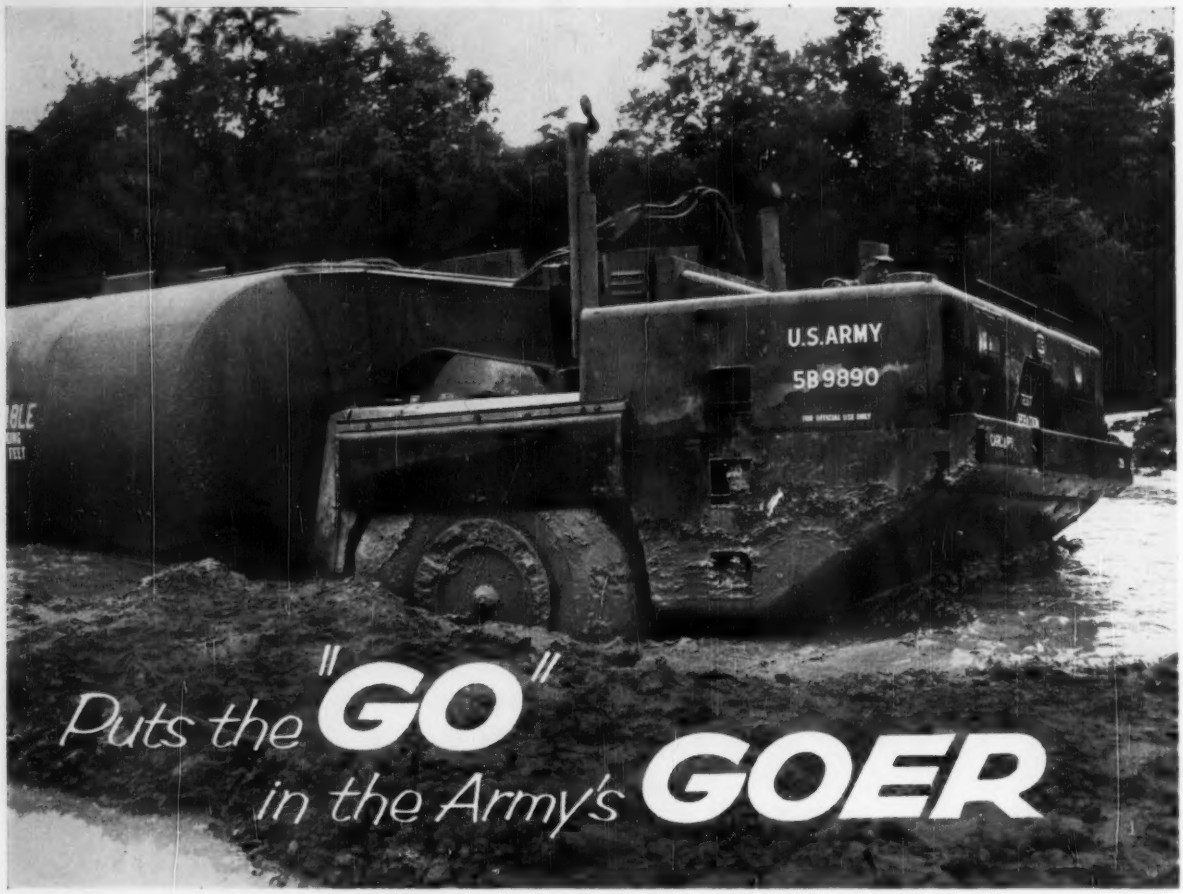


A "Team" of Pedrick Rings... An Engineered Set For a Large Diameter Engine.

Pedrick PISTON RINGS

PEDRICK PIONEERED *Conformable* RINGS IN ENGINEERED SETS FOR BIG-BORE ENGINES

GET REAL PRODUCTIVITY—GET A GM DIESEL ENGINE



Rough cross-country terrain . . . shifting sand . . . thick mud . . . 30-inch vertical walls . . . small rivers—not one of these will stop the Army's GOER.

For the GOER is a new concept in military vehicles for logistical operations—designed by LeTourneau-Westinghouse and Ordnance Tank & Automotive Command to operate literally anywhere on land.

And the engine that gives the GOER its "go" is an "8V-71" GM Diesel—a compact, lightweight power plant that delivers 274 horsepower at 2300 r.p.m. to this multipurpose vehicle.

The "8V-71" packs more punch than any Diesel offered to the Armed Forces in years—has the compactness and lightness to fit where other Diesels won't. It gives the military the power they need to do a better job—faster—in all types of equipment.

If you're looking for a Diesel to do a better job—or a special job—take a look at the GM Diesel All-Purpose Power Line.

You'll find engines rated from 20 to 1650 h.p. in only three cylinder sizes—engines adaptable to any military application. And these engines have won their spurs in every branch—in the toughest kinds of military service.

Want to know more? Write us—we'll be glad to give you full information.

GM DIESEL

DETROIT DIESEL ENGINE DIVISION
GENERAL MOTORS, DETROIT 28, MICH.

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GM DIESEL ALL-PURPOSE POWER LINE SETS THE STANDARD OF DIESEL PRODUCTIVITY

Got a tough
PISTON PROBLEM?

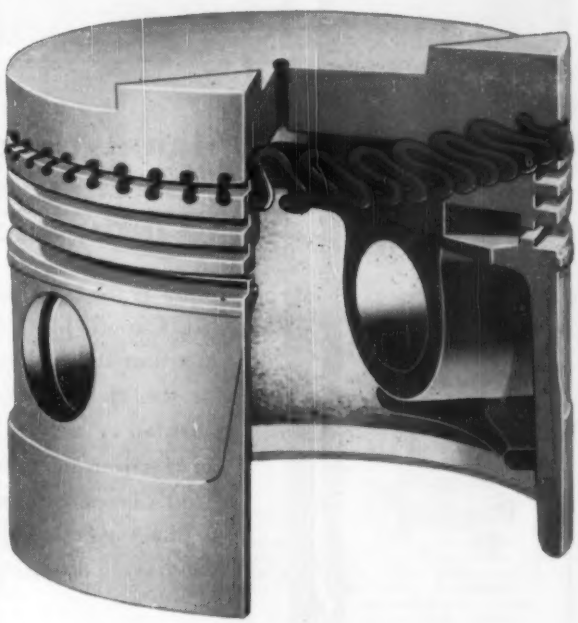
Only the Steel Wire Insert Piston Gives You

- ✶ STEEL WEAR (in top ring groove)
- ✶ ALUMINUM LIGHTNESS
- ✶ UNRESTRICTED HEAT FLOW

reduce the wear where the work is done... with

G&E WIRE INSERT PISTONS

Reducing top ring groove wear is the key to superior piston performance. G&E's patented wire reinforcing plus rapid, uniform heat flow keeps "tight as new" tolerances for remarkable mileages. Aluminum-light, steel-strong construction increases engine power and economy. G&E Wire Insert Pistons have a proven record for low cost per mile and trouble-free operation under the severest truck, tractor and construction uses. You'll save money, maintenance time, and break-down delays for your customers—by specifying the use of G&E Wire Insert Pistons.



Write for the G&E Steel Wire Insert Piston story today!

GILLETT AND EATON, INC.
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Sold in Canada by
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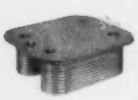
General Motors Reliability in Action...

Mechanical Blizzard!



Harrison Heat Exchangers —Reliable Products of General Motors Research and Engineering.

HARRISON COOLS OIL FOR DIESEL-POWERED SNOW MACHINE THAT PRODUCES 10-INCH SNOWFALL IN AN HOUR

Snow is made to order for perfect skiing all winter long at Mt. Christie in Michigan. Water and compressed air are mingled and distributed as a fine spray through a series of sprinkler heads. By this method a 24,000 sq. ft. area can be covered with a ten-inch snowfall in an hour! And this Diesel-powered snow machine counts on Harrison heat exchangers to control vital operating temperatures. That's because Harrison, with a half century of experience in the heat control field, builds reliability into every product. So, if you have a cooling problem, rely on Harrison for the answer.

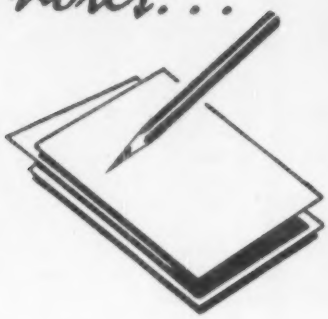
GM HARRISON

TEMPERATURES MADE TO ORDER

AIRCRAFT, AUTOMOTIVE, MARINE AND INDUSTRIAL HEAT EXCHANGERS

HARRISON RADIATOR DIVISION, GENERAL MOTORS CORPORATION, LOCKPORT, NEW YORK

editor's notes...



Our Diesel Man for this month is Henry Jordan from California's famed San Joaquin Valley . . . where they plow to a 30-in. depth, work the land 'round the calendar and are mechanized to the hilt with diesels. Henry takes care of equipment for a 7000-acre-plus operation. Story starts on Page 18 . . .

Repowering conversions are moving fast in all directions. Latest direction is toward the high-potential lightload-shorthaul bakery delivery field. It's a Cummins in a '59 Chevie. Page 23 . . .

CAT's gas engine ratings are up —thanks to turbocharging and aftercoolers. And it doesn't mean shorter engine life— thanks to a heavy-duty, proven diesel engine structure. You'll find all the details starting on Page 26 . . .

Up Niagara Falls way there's
a bus company maintenance shop
that's "taking in other people's washing"
—taking in outside equipment to
keep their shop busy fulltime.
Means their expensive shop equipment is
paid off faster . . . means smaller
operators around Buffalo benefit, too.
Sounds like a good idea, doesn't it?
Flip to Page 28 for this one.

Short half-pager on Page 30
gives you the lowdown
on Fuller's new 15-speed truck
transmissions . . .

How to get the most out of a
Maintenance Shop? Well,
one answer is to streamline—
make a production-line job out of
your operation. That's what
the Southern Pacific did—and it's
saving them time and money.
It's on Page 32 . . .

There's an interesting picture report
on Curtiss-Wright's new 12V-142
diesel starting on Page 34. Get ready
for some eye-openers—
C-W has successfully combined
extremely low weight, small size
and high output in this
new package!

ESTABLISHED IN 1923
MAY, 1960 VOL. 38 NO. 5

diesel power

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F-M diesels cut municipal power fuel cost 43% in Thibodaux, La.!

Town Powers All New Municipal Plant with 3 F-M Engines. Saves Nearly $50,000 In First Year!

This Thibodaux, La. installation says the F-M quality-and-economy story better than the best chosen words.

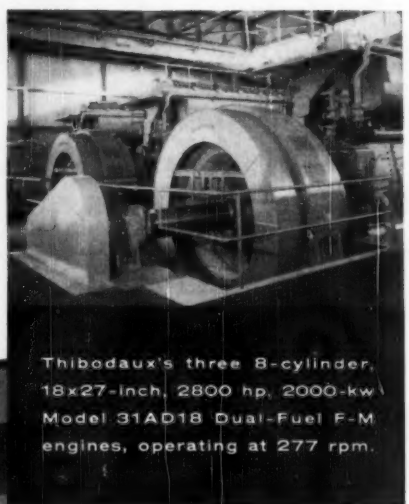
Three Fairbanks, Morse Dual-Fuel Diesels produced greater power—more efficiently—at substantial savings! 43% savings, in fact.

These F-M 2-cycle engines achieved a reduction in gas and fuel oil costs of 2.53 mills per kwh! With these 3 engines generating a total of 19,522,000 kwh during 1958, the town's Municipal Utilities System saved close to $50,000!

Thibodaux chose F-M 2-cycle Dual-Fuel engines because of their simplicity, low-speed, long engine life . . . and their built-to-last quality.

F-M engines saved (and are still saving) Thibodaux money.

They'll save *you* money, too.



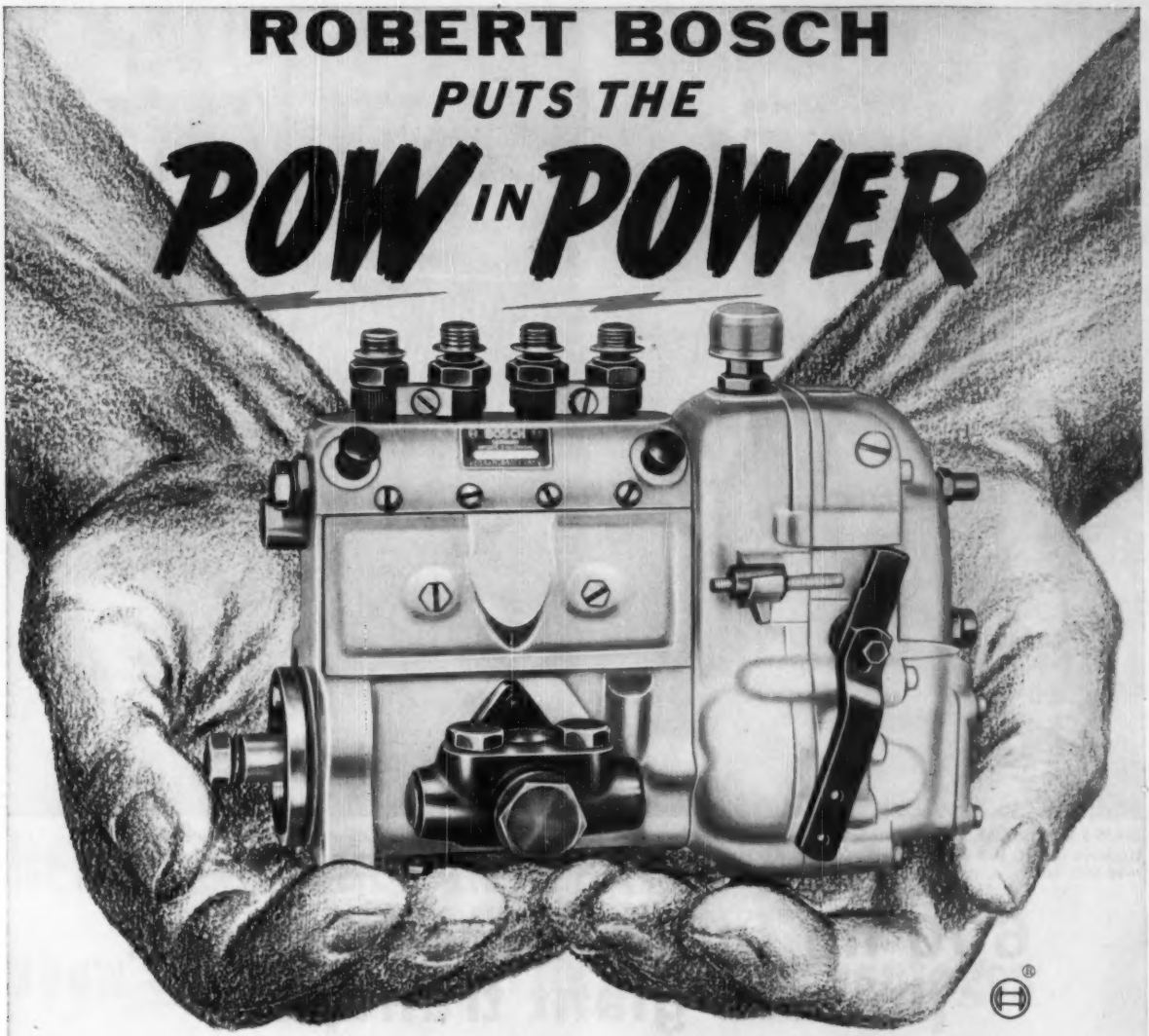
Thibodaux's three 8-cylinder, 18x27-inch, 2800 hp, 2000-kw Model 31AD18 Dual-Fuel F-M engines, operating at 277 rpm.

Fairbanks, Morse

DIESEL DIVISION • BELOIT, WISCONSIN

A MAJOR INDUSTRIAL COMPONENT OF FAIRBANKS WHITNEY CORPORATION, NEW YORK

ROBERT BOSCH
PUTS THE
POW IN POWER



— in the world's finest Fuel Injection Equipment

ROBERT BOSCH means fuel injection equipment made to the closest tolerances. It means over 30 years of experience by the designers of the fuel injection equipment which made the high speed diesel engine practicable. It means fuel injection equipment of consistently higher quality at lower price... most complete line of nozzles... world-wide service. Leading engine makers here and abroad use ROBERT BOSCH as original equipment.

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® Reg. U.S. Pat. Off. ROBERT BOSCH GMBH Stuttgart

SEATS 5 ACROSS CAB, with room to spare. Hauling 80-ton payloads over trackless desert, this French-made mechanized Goliath treads lightly over soft sand . . . its 7-foot 10-inch-diameter tires exerting contact pressures of only 14 psi, about the same as a camel's foot. Designed for all-weather operation, the giant transport is protected by a strong, light-gauge covering of stainless Rigid-tex metal.

600 hp turbocharged diesel powers giant transport

They call this truck the Berliet T-100. Specially designed to haul heavy oilfield equipment through desert country, the giant truck carries 80-ton payloads on its 16-foot-wide frame.

Heavy-duty round-the-clock power is the need here... and the T-100 gets it with a Cummins VT-12 600 hp turbocharged diesel. Long-term dependability is built into the diesel, too... with piston inserts and turbocharger casings of Ni-Resist* high nickel alloy heat- and corrosion-resisting cast iron.

No towing services in the desert ...no maintenance or repair shops either! *No matter*...the Berliet T-100 does fine without them. The truck's sturdy chassis gives it the needed ruggedness. And there's no worry about its remarkably efficient diesel whose dependable Ni-Resist cast iron parts outwit internal temperature and pressure problems...wear ...scaling...attack by corrosive combustion gases.

Wherever the going is rough, Ni-Resist cast iron provides a ready answer for automotive "trouble spots." Exhaust manifolds and associated couplings, for example...exhaust valve guides...cylinder linings.

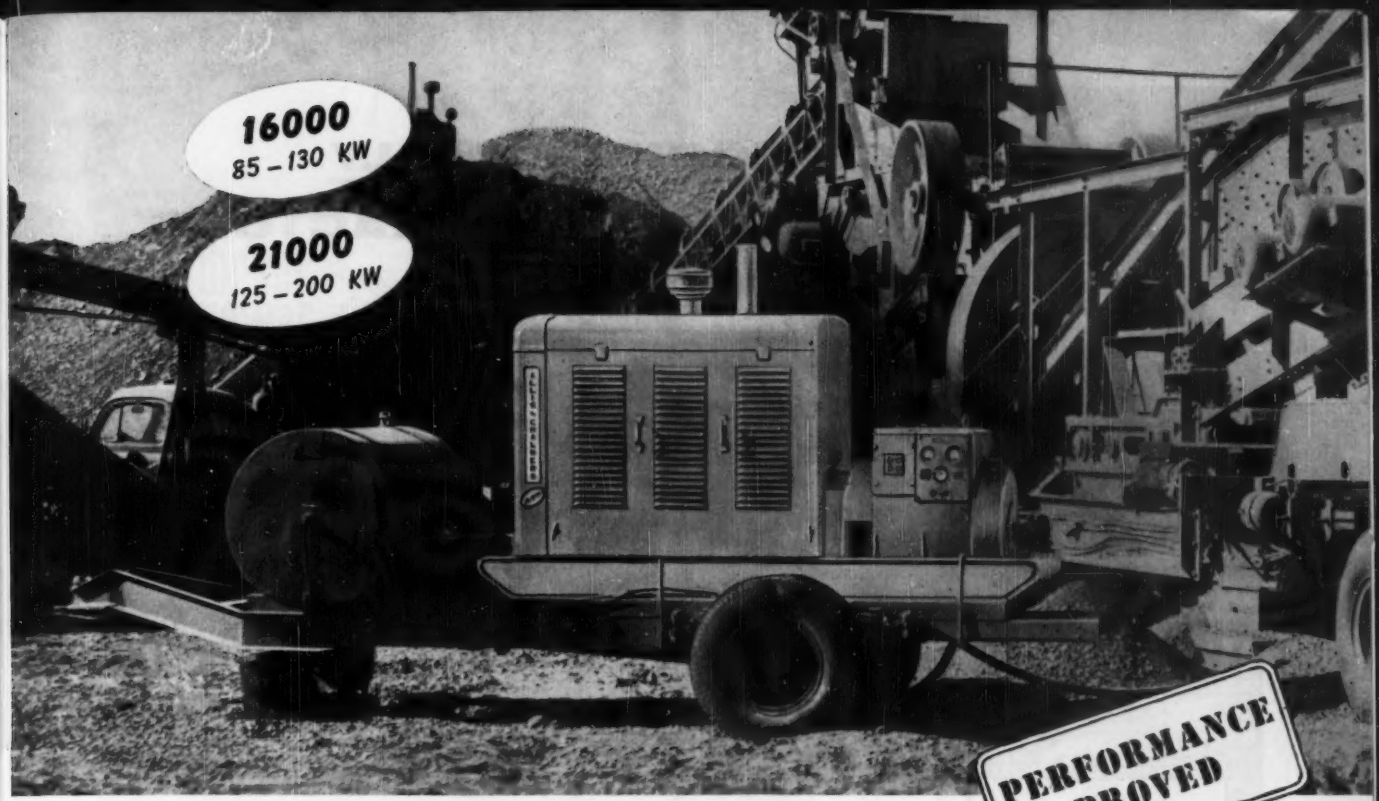
You'll do well to specify Ni-Resist parts in *your* diesels. Our informative booklet, "Engineering Properties and Applications of Ni-Resist," details many uses of this versatile high nickel alloy cast iron in diesels — includes engineering properties, composition, heat and corrosion data. A copy belongs in your reference file. Write for it — today, if you can — so you'll have it handy when you need it.

*Registered trademark

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street INCO New York 5, N. Y.

NI-RESIST

NICKEL MAKES ALLOYS PERFORM BETTER LONGER



This Allis-Chalmers 16000 diesel generating set provides electric power for motors on a crusher operating near Great Falls, Montana. Primary power source for the crusher is an Allis-Chalmers 21000 turbocharged diesel power unit, companion to the 16000.

NEW AC DIESEL GENERATOR SETS

WITH BRUSHLESS GENERATORS

show outstanding performance advantages

Can save $3,000 a year on fuel alone — Users tell us the 21000 turbocharged diesel saves as much as 2½ gal. of fuel in every 10 compared with other engines, or 1 to 4 gallons for every hour of operation.

"Startingest engine we ever had," says a northern user. "We threw away the ether can with temperatures way down below freezing — no external heating either." With their unique controlled combustion, these engines start and pick up loads in 4 to 10 seconds.

Safe in dusty, corrosive or explosive atmospheres — Brushless generators have new simplicity. There are no slip rings, no brushes, no commutators to wear or to spark. They are replaced by newly developed, non-aging silicon rectifiers that rotate with the armature.

Precisely regulated power — New Allis-Chalmers magnetic amplifier type static voltage regulator has no moving parts or contacts, no parts to burn or wear. There's unequaled fast response to sudden changes in load — heavy motor starting loads are easily picked up.

Allis-Chalmers manufactures and stands behind all four major components. This means coordinated engineering, matched performance, undivided responsibility — an Allis-Chalmers exclusive. Sets are simple, unit-type, self-contained — mounted on husky skids. No special foundation required, no danger of misalignment. Electrical connections are simplified to speed installation and reduce related costs. See your dealer for more about these outstanding 16000 and 21000 sets. Allis-Chalmers, Milwaukee 1, Wisconsin.

8G-40

ALLIS-CHALMERS

***POWER* FOR A GROWING WORLD**

AIRESEARCH ECONOMICALLY TURBOCHARGES SMALL TRACTORS

AiResearch T-6 turbocharger

International Harvester's TD-9 shows 18 percent more torque rise

AiResearch's small T-6 turbocharger now enables the 282 cu. in. engine on International Harvester's new TD-9 crawler to develop a torque equal to a naturally aspirated engine 25 percent larger in displacement. This low cost turbocharger substantially reduces the unit cost of small tractors operating at this power level.

Boosting this small block engine to 71 horsepower and greatly increasing its versatility, the above pictured T-6 model also provides up to 10 percent better fuel economy.

Weighing 24 lbs. and measuring 7¾ in. in diameter, the T-6 is one in a complete line of AiResearch turbochargers which makes the turbocharging of small diesel engines economically desirable.

AiResearch is a world leader in the development and production of air-cooled turbochargers and turbocharger controls for all major diesel engine applications. Your inquiries are invited.

THE GARRETT CORPORATION

AiResearch Industrial Division

9225 South Aviation Blvd., Los Angeles 45, California

DESIGNERS AND MANUFACTURERS OF TURBOCHARGERS AND SPECIALIZED INDUSTRIAL PRODUCTS

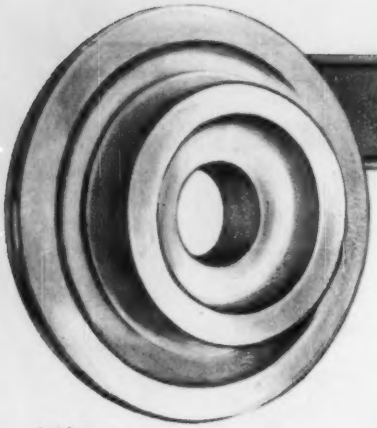
diesel power

editorially speaking

. . . about Warranty, Abuses of

Warranty is getting to be a hotter subject for discussion, gripes and often bitterness. However, we've noted that bitterness and griping are usually directly proportional in intensity to the degree of guilty conscience plaguing the individual. Now manufacturers are not lily-white and blameless but we'll say one thing, reputable ones bend over backwards to protect their product's name. Some users and even distributors may not agree . . . there'll always be different viewpoints . . . but from our observation, their record is good. Warranty is not a declaration of open season on manufacturers; there must be some limitation on liability. If the factory is wary of warranty claims, some field practices have made them so. Some claims are outrageous. Suppose that you got a fuel injection pump back for warranty—completely disassembled with the parts in a carton. Basis? It just "failed in service"! Would you honor a complaint of poor engine life when it was found that the injection pump had been reset to deliver 130% of normal maximum fuel? Or the engine that mysteriously "burned up" . . . plenty of oil and water . . . but you notice a brand new lower radiator hose? The list is endless; you know cases that we don't. Warranty imposes a dual obligation—on the manufacturer to stand behind his product and on the customer *to use the product as intended and take reasonable care of it*. Between the manufacturer and the customer is the distributor. He's been known to gripe when left holding the bag on a warranty claim. Here, we've seen cases where manufacturers have bailed them out, wholly or partially, on claims that never should have been accepted. Granted that customer pressures are heavy, distributors and dealers have a responsibility to the factory as well. Above all, they should know the in's and out's of the factory's warranty policy and act accordingly. If everyone concerned would accept their responsibility and act fairly, the problem would go away. If you goof, accept the consequences. If you've got a legitimate claim, press it; it'll be honored. And remember, in warranty claims, no one wins. The only way to win is to do what's right and avoid them.

B. P. E.

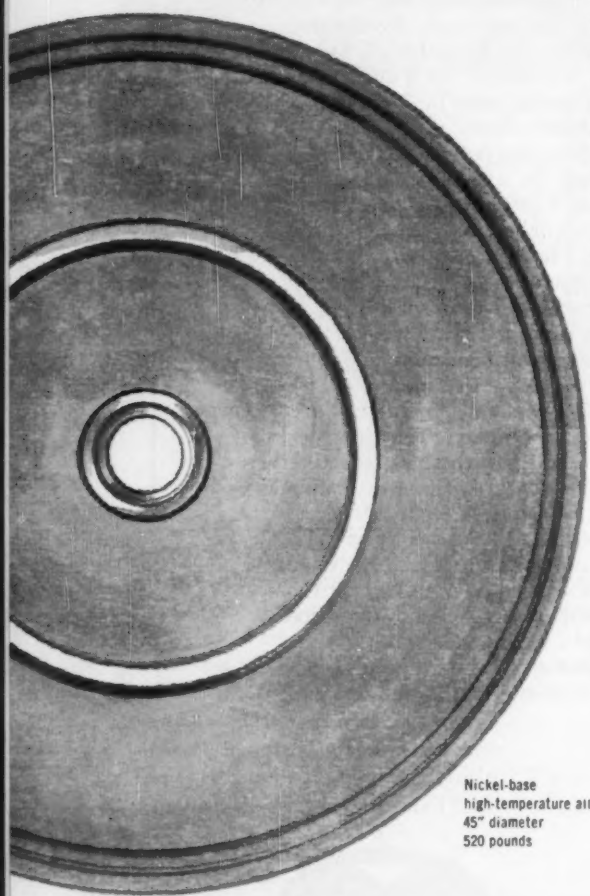


Iron-base
high-temperature alloy
21½" diameter
244 pounds

FORGED

Titanium
24½" diameter
191 pounds

To speed the progress of gas turbine development

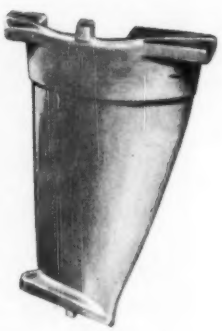


Nickel-base
high-temperature alloy
45" diameter
520 pounds

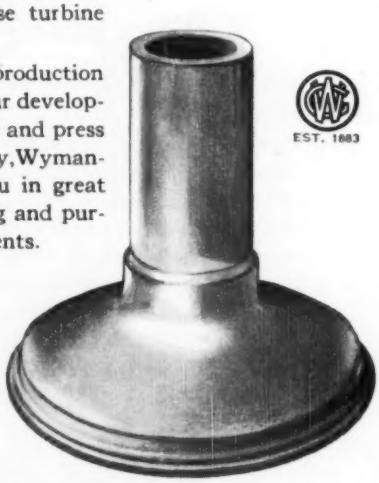
For applications ranging from automotive to aircraft propulsion, Wyman-Gordon is the world's largest producer of forged components for the gas turbine industry—turbine wheels, compressor discs, blades and vanes, for stationary turbines, nuclear installations, aircraft and missiles.

Wyman-Gordon's production experience includes forgings of a wide range of metals from low-alloy high-strength steels—titanium—intermediate temperature alloys—to the super-nickel-base alloys and refractory metals. *Guaranteed minimum properties* assure improved performance and dependability, and enable designers constantly to raise their sights and increase turbine capabilities.

With unexcelled research and production laboratories to concentrate on your development problems and with hammer and press capacity unequalled in the country, Wyman-Gordon is prepared to serve you in great depth at the design, engineering and purchasing stages of your requirements.



Titanium
15½" length



High-strength steel
19" diameter
143 pounds

EST. 1883

WYMAN-GORDON

FORGINGS

of Aluminum Magnesium Steel Titanium . . . and Beryllium Molybdenum Columbium and other uncommon materials

HARVEY ILLINOIS
WORCESTER MASSACHUSETTS
DETROIT MICHIGAN
GRAFTON MASSACHUSETTS
FRANKLIN PARK ILLINOIS
LOS ANGELES CALIFORNIA
FORT WORTH TEXAS

diesel power news section highlights

CABS GOING DIESEL . . .

American Marc, already in production with world's first diesel outboard plans Fall production of diesel engine especially designed for growing taxicab market.

"PLAN BULLDOZER" WINS AWARD . . .

United States Chamber of Commerce gave Associated General Contractors of America an Award of Merit this month for their disaster relief program, "Plan Bulldozer." This is the plan that organized local contractors throughout the country to mobilize and fight disaster–natural and manmade.

PERCENTAGE OF DIESEL FARM TRACTORS STILL INCREASING . . .

Reports on farm tractor production for January and February, 1960 show a total (wheel and track-laying types) of 40,882 units of which 15,547 or 38 per cent are diesel-powered. Of wheel tractors–32.4 per cent; tracklayers–77 per cent. In some four years, percentage has risen from about 12 per cent to the present figure. Steep climb in 1959 plus a good year for farm sales fooled us in our 1959 Agriculture sales prediction (DIESEL POWER Jan., 1959). This was adjusted in predicting sales of 99,000 agricultural engines in 1960 and from this early look we could be low again. We'll gladly be wrong if it means more diesel sales.

FIRST FLEET MAINTENANCE EXPOSITION COMING

New York City's Coliseum will house the nation's first Fleet Maintenance Exposition, October 24-27, 1960. Long time off but mark it down now. Ambitious plans call for a combination of workshop sessions, panel discussions and special problem clinics as well as industrial exhibits by leading fleet suppliers. Over 12,000 fleet executives were interviewed and asked what they'd most like to see on the program. As a result, five workshop sessions are planned each covering a subject of key interest. These will be supplemented by panel discussions and clinics.

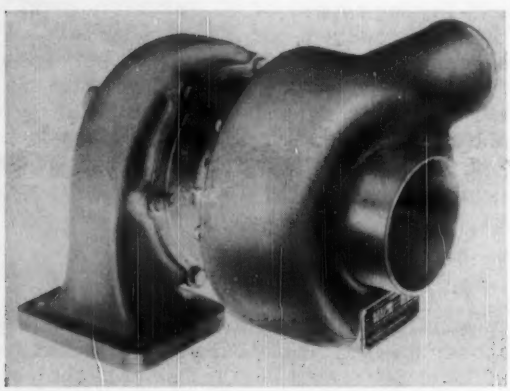
LEYLAND DIESEL TRUCKS SELLING . . .

Leyland Motors (USA) Inc. is importing Leyland, Albion and Scammel diesel-powered British-built trucks in sizes from delivery trucks to trailer tractors. Spear-heading the invasion is the Albion 4-ton Claymore, a delivery type with 15,680 lb gvw rating. Yale Transport is already operating them in the New York-New Jersey area . . . and so are truck rental people. "People are flying in from all over the country to take a look at what we've got" says Robert B. Hilton, vice president of sales. "Believe-it-or-not, we've even sold our demonstrator," confesses Hilton. Interest in light diesel trucks is here; key to sales is price–and suitable product availability.

MORE INDUSTRY NEWS FOLLOWS ►

diesel power news section

Cummins Hi-Speed Communication System was opened by C. R. Boll (right), VP-Sales and R. D. Hicks, Director-Parts Sales with an initial teletypewriter message to 63 Cummins distributors and sales offices throughout US and Canada. New 9000-mi net work will disseminate latest service and maintenance techniques . . . receive parts orders . . . and keep Cummins factory in close contact with day-to-day field developments.



AiResearch's T-11 Turbocharger takes the cake for being just about the smallest —housing diameter is just 8-in. It's designed for diesel engines in the 150 to 350-hp range. "Our T-11 possesses a third less inertia than any other turbocharger in its class," claims AiResearch. "With fewer parts, it is more economical . . . has lower maintenance costs. It enables your engine to operate at lower peak pressures, with better fuel economy."

EMSA's Los Angeles Chapter elected a new slate of officers last month to head up this fast-growing organization. Explaining Equipment Maintenance Supervisor's Association rapid growth, one member put it this way, "Sure, we like a drink or two together . . . but what we've really joined for is to learn how to solve some of our on-the-job headaches caused by equipment maintenance and repair."

EMSA's New Officers: L. V. Morgan (Cummins Sales & Service), secretary; Dan Stoddard (Lincoln Engineering), 2nd VP; Bob Moodie (J. A. Thompson & Son), president; Wallace Yeoman (J. A. Thompson & Son), treasurer.

NEWS ABOUT PLACES, PEOPLE AND PLANTS FOLLOWS ►

NEWS SECTION . . .

Robert Bosch Distributors To Visit Stuttgart Plants

Robert Bosch Corporation is making it possible for its major distributors to visit the factories in Germany where its fuel injection equipment, automotive electrical equipment, test stands and other specialty items are made. A Super-Constellation has been made available at low charter rates for the trip. A full load will take off on May 22, returning June 3rd.

Those going, including your Editor, will participate in a 4-day program set up by Robert Bosch with the balance of the time at their disposal—a generous and attractive arrangement.

Robert Bosch products are appearing in ever greater quantities in this country . . . fuel injection equipment on production engines . . . electrical equipment on cars, principally the imports from many countries. Purpose of the trip is to give US distributors opportunity to see personally the tremendous production facilities building the products distributed through a world-wide organization. First-hand contact will also promote greater appreciation and understanding of mutual interests and problems.

Tull Sees Truck Boom Coming

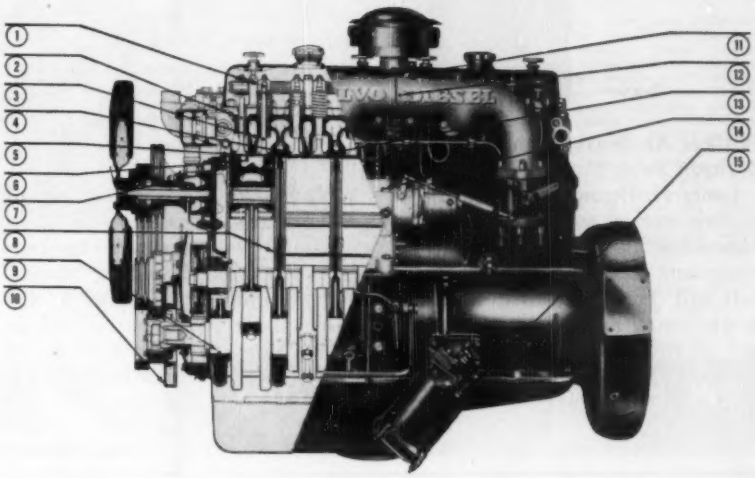
E. Don Tull, new president of Cummins, speaking before Cummins distributors from all parts of the United States, Canada, Mexico and Puerto Rico predicted a boom for the trucking industry in the 60's. Also, higher horsepower requirements for virtually everything industrial—from trucks to electrical generators for schools and hospitals—were forecast at Cummins' national distributor meeting. Tull based his prediction of a trucking boom on an estimated increase in the country's gross national product from an anticipated $500-billion in 1960 to $707-billion in 1970. This increase in the total value of the nation's goods and services will be the result of a rising population and a steadily improving standard of living, he said.

(Continued on page 44)

Power Pace-setters for over 50 years . . .

VOLVO DIESELS

are rugged, economical, outstanding performers



Put this power *that pays for itself* to work for you! Superbly designed and built in Sweden, VOLVO Diesels feature direct injection, open combustion chamber, 4-cycle operation. They purr into action at the press of the starter, cost very little to run and maintain, have a world-wide reputation for durability and quiet, smoke-free service. 9 models, 1 to 6 cylinders, 5 to 185 h.p. for industrial, stationary and marine service. Cutaway shows typical Volvo construction features.

Toroidal "noiseless combustion" chamber (6) perfectly blends fuel and air to provide maximum power output and fuel economy, eliminating carbon deposits and wasteful exhaust fumes.

Wet cylinder liners (8) with rubber "o" rings mounted in engine block stop corrosion and wear, preventing cylinder misconfiguration. Pistons are quick and easy to replace. Eliminates costly reboring.

Wear-resistant valves (3) are built for extra long life. Stellited faces (4). Hard-chromed stems (2). Specially hardened alloy caps (1).

Long-life light alloy pistons (5) with hard-chromed upper piston rings resting in inserts (7) of special cast iron to withstand heat and pressure.

Other outstanding Volvo engine features: Large bearing areas (9). Viscosity type torsional damper (10). Steel-laminated head gaskets (13). Dual cylinder heads (11). Time-tested multiple unit injection pump (14) for accurate precision fuel metering. Full-flow lub. oil filter (15). Split-type manifold (12) to avoid heat stress breakage.

Write for complete data on entire Volvo diesel engine line and Volvo service.

Volvo Import Inc.

452 Hudson Terrace, Englewood Cliffs, N. J.

VOLVO

diesel power news section people plants

J. H. Bennett

Walker Appoints Bennett Division Sales Manager

James H. Bennett has moved up to division sales manager of **Walker Manufacturing Company's** original equipment sales department. Bennett will direct sales to heavy-duty motor truck, industrial equipment, and off-the-highway vehicle manufacturers. Bennett joined Walker in 1948 as Sales Engineer in the Original Equipment Division and, prior to his appointment, was engaged in original equipment sales to major car manufacturers.

"This move represents the initiation of a concentrated program designed to expand Walker's services and products manufactured as original equipment components in the field of motor trucks, farm and road construction equipment, and industrial engines and equipment," said **R. K. Ruland**, vice president, original equipment sales.

Wolkenheim Now Marketing VP At Fairbanks-Morse

Stanley E. Wolkenheim has been appointed Vice President, Marketing, of **Fairbanks, Morse & Co.** Wolkenheim is transferring to Fairbanks, Morse from the A. O. Smith Corporation where he has been Director of Marketing since 1955, and Vice President since 1957.

M. J. Sullivan

Sullivan Sales VP For AMARC

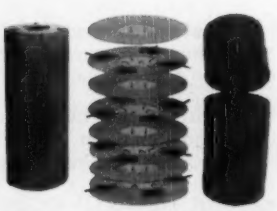
M. John Sullivan has moved up to vice president and general manager in charge of Washington, D. C., sales for **American MARC.** Sullivan recently joined American MARC after 8-yrs. with Consolidated Diesel Electric Corporation where he had been acting-general manager. He'll be based in the AMARC's Washington, D. C. office, where he will direct sales of the company's engines and generator sets to the military and industry.

HILCO® FULL FLOW FILTERS

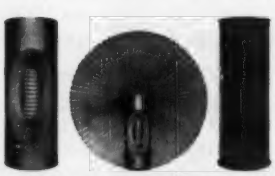
FOR MAXIMUM FILTRATION OF DIESEL AND GAS ENGINE LUBRICATING OIL, FUEL OIL AND GAS FUEL···

with these features:

- High flow rates
- Low pressure drop
- Choice of filter cartridges
- Large dirt storage area
- All steel welded construction
- In-out pressure gauges
- Quick action cover lifter
- 100 psi standard design pressure
  Higher pressures upon specification
- Swing bolt cover construction



HILCO FILTER CARTRIDGE TYPE FW-718 COMBINATION EXTENDED SURFACE AND DEPTH MICRO FILTRATION



HILCO FILTER CARTRIDGE TYPE PL-718 EXTENDED SURFACE FOR EXTREMELY HIGH FLOW RATES

"F" Series HILCO HYFLOW OIL FILTER

HILCO FULL FLOW FILTERS Available in capacities up to 2000 GPM and Micro Filtration at that . . . Removing Particles 5 Microns and Smaller

• Write to the PIONEERS of Micro Full-Flow FILTRATION

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120 WEST FOURTH STREET
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New fast acting penetrant and rust solvent . . . saves time, trouble, money and tempers. Available in pressurized cans or regular pints and gallons.

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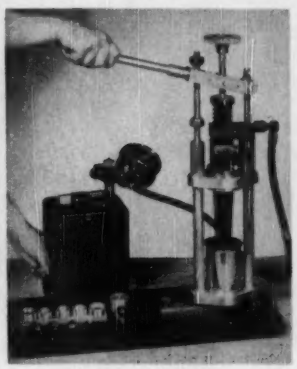
UNIVERSAL INJECTOR TEST STAND—

For Testing all Unit Injectors in One Fixture. Makes Plunger and Bushing Tests on all General Motors Unit Injectors.

KIENE HYDRAULIC TEST PUMP — For making all conventional Tests on Nozzles. Photo shows use with Universal Injector Test Stand.

KIENE CONNECTOR NUTS — For convenient Attachment of Equipment to Test Stand or Test Pump. All sizes Connectors available.



KIENE PORTABLE TEST EQUIPMENT

An entirely new and different product for the Diesel Industry offering features never before available in the field of Injection and Hydraulic repair and Servicing tools. Kiene Injector Test Stand and Hydraulic Pump give you all operating advantages of existing tools in addition to introducing many new and exclusive features. Kiene Products are Portable, Light Weight, Compact, Rugged and Revolutionary in Design. They are engineered to give the Field Service Man adequate tools for on the job diagnosis and quick repair of valuable Diesel Equipment.

SAVE MONEY—
SAVE DOWN TIME

Write for Bulletins KTP-50 and UTS-10

KIENE DIESEL ACCESSORIES, INC.

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P. G. Clarke

B. D. Fish

Lister-Blackstone Promotions . . .

Sir Percy Lister, during his recent visit to the United States announced the following promotions in **Lister-Blackstone,** Inc.: **B. D. Fish** to the position of Director and General Manager, and **P. G. Clarke** to Sales Manager. Fish has been with the organization since 1942. Clarke has been with the parent company in England since 1946 and has been on the sales staff of the American organization since 1957.

Puglisi Appointed Cuno Assistant Sales Mgr.

S. Joseph Puglisi has moved up to assistant manager of the Sales Engineering Division, **Cuno Engineering Corporation.** Puglisi assumes responsibility for operation of the Division. In addition, he'll devote specialized attention to new applications and uses throughout industry of the company's Poro-Klean, porous metal and Micro-Screen, screen mesh filter media.

Steele Named Gould Batteries Manager

F. B. Steele has been appointed Chicago Regional Manager for the Industrial Division of **Gould-National Batteries, Inc.** Steele has been Chicago District Manager since early 1957 and has been with Gould since 1947. In his new capacity, Steele directs sales and field engineering in the states of Illinois, Wisconsin, Minnesota, Iowa, North and South Dakota and Northern Indiana.

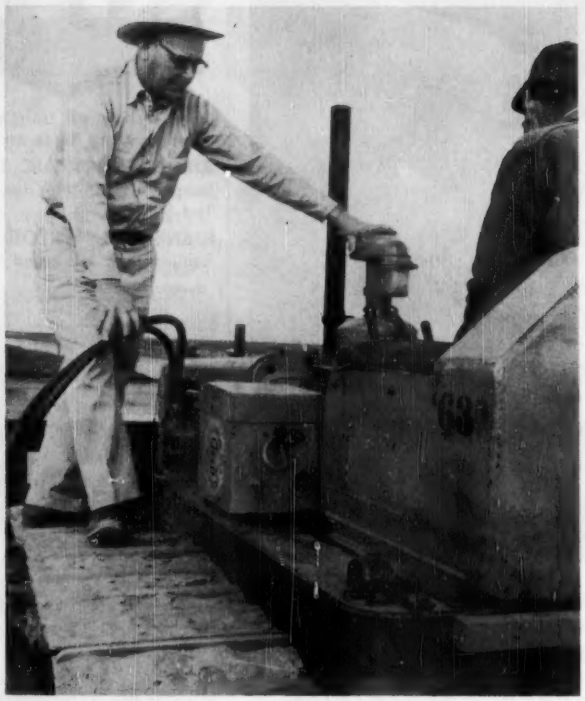
T. J. Garrison

New Detroit Manager For Van Norman

Thomas J. Garrison has been named Detroit division manager for **Van Norman Machine Company's** Automotive Division. Garrison will be in charge of sales and service of Van Norman automotive service equipment in the "Motor City" area. Prior to joining Van Norman, he was employed by Brown & Bigelow Co., of Detroit, Aro Equipment Corp., and Independent Pneumatic Tool Co. The new division manager is a veteran of more than 14 years as a salesman in the automotive service equipment industry.

(*Continued on page 48*)

Today's Diesel Man...



Farm mechanization has made men like Henry Jordan (left) the farm's indispensable man.

"I'm primarily concerned with operation of our 11 farms but seeing that Georgianna Farm's shops function efficiently and promptly is also my responsibility. We 'rent' our equipment from our equipment pool, Georgianna Farms, at a rate that covers equipment amortization and operating costs. It's Henry Jordan's ability to keep down equipment costs that often makes the difference between individual farm loss and profit. We couldn't operate without him."

Don Camp, Secretary-Treasurer
W. B. Camp & Sons, Inc.

pictures and text by Paul B. Harder

Henry Jordan epitomizes the revolution that has swept American agriculture in general and California agricultural operations in particular during the last two decades. Henry is shop superintendent for Georgianna Farms, agricultural equipment subsidiary of W. B. Camp & Sons—one of California's larger and most-mechanized agricultural enterprises. Because of the great increase in use of machinery—diesel-powered machinery—on today's farm, Henry has become an agricultural VIP of singular importance.

W. B. Camp & Sons, with agricultural holdings in Maine, South Carolina and the state of Washington as well as California's San Joaquin Valley, is one of the nation's larger and more alert agricultural firms. It is mechanized to the hilt, and Don and Bill Camp, who share the organization's management responsibilities, quickly confess that without mechanization they would have a hard time staying in business.

"It is simply a matter of moving over the ground," points out Bill. "The only way to cultivate enough ground quickly enough to have a paying operation is to mechanize. Mechanization—diesel mechanization—has proven one of our biggest economies."

Mechanization Makes the Land

While somewhat larger than many local agricultural layouts, the W. B. Camp & Sons operation is typical of that found in most of the surrounding area. The pattern has earned for the expansive San Joaquin Valley the unchallenged title as the most highly-mechanized agricultural section of this or any other country.

Flat and heavy-soiled, "the valley" practically forced itself to this distinction. With average rainfall less than 6-in. per year, soil conditions do not favor use of light agricultural implements. Land must be irrigated and turned to a depth of as much as 30 inches. To take advantage of the long growing season, close attention is paid to crop rotation, fertilizing and pest control. All these operations, plus crop cultivation,

Cotton pickers get complete checkout when idle. Most are gasoline-powered . . . will be converted to diesel as engines wear out. Many parts are deliberately scrambled to distribute wear.

are performed with the aid of wheel-type and track-laying tractors—most of them diesels.

Field functions—the day-to-day work of plowing, disking, planting, cultivating—have been adjusted to take advantage of modern agricultural machinery. In the process, W. B. Camp & Sons' organization has been similarly modified to make most effective use of the tractors and power-drawn agricultural implements in daily use on their 7000 acres in Kern County, California.

"Dad started farming years ago when it was considered almost a desert," reflects Don Camp. "I remember as a youngster in the '30's seeing diesel tractors working our land. Dad could see what mechanization could do to productivity. My brother Bill and I have done little more than build on what he had already established."

But the Camp boys have built wisely. Both of them, graduates of Clemson Agricultural College in South Carolina, have met the challenges of an industry that is often accused of "becoming mechanized in spite of itself."

Don has gravitated toward administering the eleven Camp farms within the 30-mile radius of their rural headquarters outside of Bakersfield. Bill oversees business management details and keeps a finger on the pulse of the firm's mechanized operations. Knotty problems in any area call for joint head-scratching. "Impossible" problems bring grey-haired W. B. Sr. into the discussion.

But Successful Mechanization Depends on Policy and People

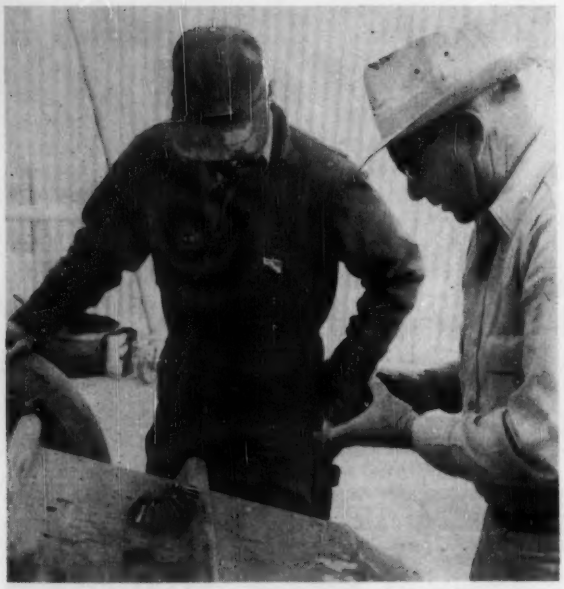
One early sign of twentieth-century mechanical break-through in the Camp holdings was the hiring in 1945 of Oklahoma bus mechanic Henry Jordan. With a master mechanic already on the job, this brought to two the number of full-time mechanics working for the firm—a significant indication of the direction in which W. B. Camp & Sons were headed.

Diesels were a deep mystery to Henry in those days. Yet in 1947 he moved up to shop foreman. The firm had 21 diesel tractors and Henry had won his spurs as a diesel mechanic. Today all but a few of the 56 tractors operated by W. B. Camp & Sons are diesels and Henry Jordan has moved up to the added responsibility of administering the work of six full-time mechanics.

Other things have happened "down on the farm," too. "For two months of the year I'm practically a cotton picker," laughs Henry Jordan. "During October and November I seldom see this shop. I'm working with our 14 two-row cotton pickers day and night. I come back to the shop when the crop is in the gin."

Perfection of self-powered mechanical cotton-picking machines catapulted Henry (and his opposite-numbers on other farms) into the agricultural spotlight more dramatically than has any other single agricultural development.

In the words of Bill Camp, "It was far easier to make a cotton-pick specialist out of a top maintenance man than try to make a master mechanic out of an agricultural man." Henry Jordon is now rated one of the sharpest cotton harvester specialists in the San Joaquin Valley.



Diesel and implement specialist Henry Jordan (right) checks gear wear with one of six full-time mechanics.

Maintenance Must Fit Nature's Cycle

While mechanization has done much to speed specific chores at crucial periods, it has done little to the cyclic pattern to which agriculture must naturally adhere. Soil still must be worked before seeding; crops still need to be cultivated before harvesting; and harvesting of some products—notably cotton—must still be performed before the season's first rain. Adjusting maintenance and repair operations to fit nature's time schedule and the Camp plan of operation have placed great importance on daily maintenance.

To the degree possible in a widely-scattered agricultural operation, Henry has hedged against untimely equipment failures through careful attention to 10-hr service checks.

"In our organization this is a responsibility of the operator. We've been successful in impressing upon these men that their job depends upon their equipment—that they have to keep it serviced." Accordingly, every noon they bring their equipment to the service yard of the farm on which they're working, fuel up and take care of the 10-hr servicing.

Camp & Sons' equipment pool known as Georgianna Farms operates as a separate organization charging the respective Camp farms for hourly and daily use of tractors and farm implements. Hence, equipment breakdowns become as much a concern to individual farm foreman as they do to Henry Jordan.

While the equipment pool idea has greatly reduced the amount of machinery W. B. Camp & Sons needs to operate, it places a proportionately larger demand upon each tractor and implement. This greater utilization adds to the significance of Henry Jordan's PM and repair operations.

Both land preparation and much of the crop cultivation is carried on around the clock. Operations of the eleven farms are calculated to compliment each other equipment-wise wherever possible. This injects another factor into the maintenance equation.

"We have about two months each year when the tractors are not in operation. Generally speaking, we use the track-layers when ground is being prepared for planting; they are not needed when crops are being cultivated. The opposite is true for the wheel-types. Major repairs must be planned for free time of both types. But the rest of the time, we've got to make sure the equipment can run.

"We have hour meters on most of these tractors and watch our lubrication periods carefully," points out Henry Jordan. "Major servicing is always taken care of here at the Georgianna Farms, not out in the fields where the equipment is operating. We want the equipment, particularly the tractors, in here where we can give the whole unit a quick checkover."

Henry Jordan does not have PM forms for this work. He and his six men take it as a normal course of events that tractors are carefully examined and run whenever they come into the Georgianna Farms yard.

Repairs are something different. Details of these, by individual tractor, are recorded and filed, thereby providing a permanent record of all repair work done on each unit.

Purchasing—
Added Maintenance Supervision Responsibility

Purchasing of tools, expendable parts and supplies and advising on capital investments in machinery similarly fall in Henry's hands. Though petroleum products are provided on the basis of long-term contactual arrangements, everything else essential to the continued operation of such intricate machines as cotton pickers, planters and track-laying tractors must be purchased and held in stock.

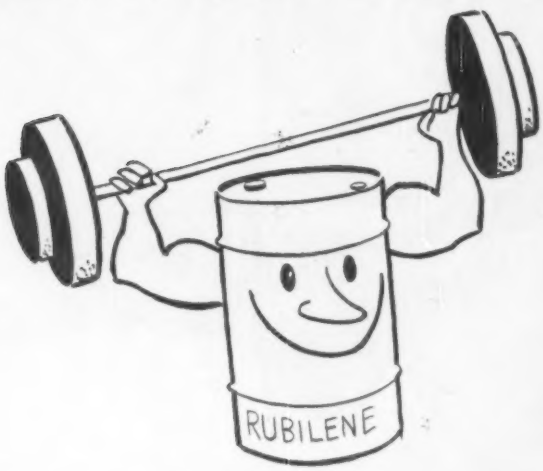
"For each different piece of equipment I carry a complete set of replacement mechanical parts." Henry waved through the open door of his office towards tiers of bins. "All these parts are noted in my card file. When they're used, an order is immediately placed to replace them and bring inventory back to its proper level."

Though major repair items are usually purchased from original equipment sources, Henry Jordan does a reasonable amount of experimenting with new items on the market, always looking for products with longer life or that are easier to maintain. The firm for some years has been testing farm tires for one of the major tire manufacturers.

Though Henry Jordan does not attempt such precision work as injector and pump repair and calibration, his Georgianna Farms repair facilities are large and complete. As in any up-to-date shop, repair work is speeded and improved with use of powered hoists and tools.

"It's a big change from what I knew as a boy on the farm," reflects Henry. "It used to be that you could just about judge the size of a man's layout by counting his horses. Now you have to count the number of mechanics on the payroll."

When a Midwestern power cooperative won the REA Diesel Progress Award, the engineers were properly proud. And so was Sinclair—because these engineers had selected Sinclair RUBILENE® HD 40, a diesel lubricating oil, to keep their diesels running without breakdown.



Experience proves that Sinclair RUBILENE is superior under rugged load carrying conditions. Wear is lessened, operation more economical. Chances are your diesels, too, will run better at less cost with Sinclair lubricants. Call your local representative or write...

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More manufacturers protect their precious new products with FRAM than with any other filter. See why:

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With today's rapidly rising maintenance costs it's just plain good sense to continue to protect your equipment with Fram Filters. Leading suppliers carry Fram Filters—be sure to specify Fram Filters!

FRAM
OIL · AIR · FUEL · WATER
FILTERS

FRAM CORPORATION, Providence 16, R. I.

Bunny Bread Dealer Saves Dough By Converting To Diesel!

Diesels in city bread delivery (lightload-shorthaul/stop & go) expected to halve their fuel costs.

Nolan Junge, general manager of the Junge Bakery of Joplin, Missouri, gazed fondly out the window at one of his bread delivery trucks—fondly because it was saving him money. It was a standard forward control model 1959 Chevrolet. But under its hood was a brand new Cummins diesel.

"Here in the bakery business there aren't many cost corners left for us to cut," stated Nolan Junge. "Your labor is fixed by the unions . . . your overhead . . . your flour and milk costs . . . and the price of a loaf of bread are all predetermined. So we began looking around for some way to hold our rising costs down."

With their 80 trucks driving over 112,000 miles every month and burning some 12,000 gallons of fuel, the engine looked to Mr. Junge like a good place to start trimming his costs. He called in Bob Phillips, Cummins Diesel Joplin branch manager. Junge Bakery wanted to try a diesel in one of their route trucks, Junge told him.

Conversion . . .

Cummins Diesel of Joplin removed the 140-hp gas engine . . . removed the transmission and drive line. They blocked the front springs, adding an extra leaf. Then dropped in a new Cummins, Model J-70-B . . . and a Clark 5th overdrive transmission. Finally, they put together a new drive line for the truck.

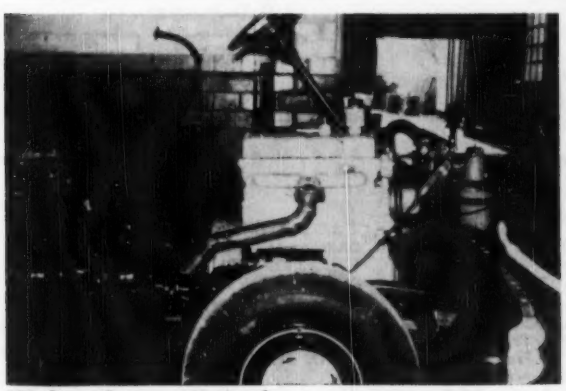
How's it doing?

"Well, we're driving it 180 miles a week, getting 14.7 miles per gallon! And our best driver on gasoline doesn't get more than 9.5 mpg—our average is even lower. So, as I say, this new vehicle looks good. We expect mileage might even get up to around 16 mpg. Exhaust? Well, as you know, bread can soak up odors pretty fast—but we've no trouble there. We ran the pipe out the rear. Noise and vibration? Yes, it's up but not enough to bother us."

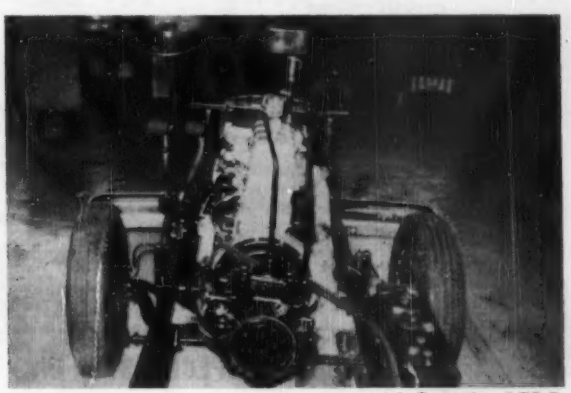
Nolan Junge's Chevrolet conversion has over 6000-miles on it already. He expects to keep right on driving it for 300 or 400-thousand miles. "Can't even begin to expect *that* kind of miles out of my gasoline rigs," he says.

Junge is keeping careful track of his newly-repowered delivery truck—with a definite eye toward future conversions. "I've already made a preliminary report to my fellow members of the American Bakers Association and the American Bakers Cooperative," he told us. "And they're all watching this initial installation of ours with a great deal of interest."

Looks like there's a whole new market opening up in the bakery delivery field for lightload-shorthaul diesels. . . .



'59 Chevrolet was repowered . . .



. . . with Cummins J-70-B.

LOOK for this Seal of the ASSOCIATION of DIESEL SPECIALISTS when you need Specialized Service for your engines.

identifies Qualified ADS Members
symbolizes Know-How—Modern Facilities—Ethics
guarantees work performed by Factory-Trained Technicians using Factory-Approved Methods with Best Materials

Listings below are available to ADS Service Members desiring to participate in this Directory. Code letters in each listing indicate the Specialized Sales and Services offered by each Member Shop. Code symbols are below.

F—Fuel Injection Equip. A—Engine Accessories & Specialties C—Engine Components & Parts
G—Governors T—Specialized Tooling & Test Equip. E—Electrical Equipment

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G T E Tel: EMpire 8-4527

BROWN & MURRAY, LTD.
237 Fort Street
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G T E Tel: WHitehall 3-8405

MEXICO

DIESEL Y EN CENDIDO DE MONTERREY
Matamoros No. 388 Pte.
F A T Monterrey, Nuevo Leon, Mexico
E Tel: Monterrey 3-38-55

ALABAMA

DIESEL FUEL INJECTION SERVICE
365 N. Royal Street
F A C Mobile 6, Alabama
G T E Tel: HE 2-7513, HE 3-5058

ALASKA

VAN'S DIESEL SERVICE
119 Second Street
F A C Juneau, Alaska
T E Tel: 6-1670

ARIZONA

PERKINS DIESEL SERVICE
F A C 747 South Country Club Drive
G T E Mesa, Arizona

CALIFORNIA

H. G. MAKELIM CO.
655 Bryant Street
F A T San Francisco 7, Cal.
E Tel: YU 6-5682

DIESEL CONTROL CORPORATION
226 No. Marine Avenue
F A G Wilmington, California
T Tel: TErminal 4-8516

CONNECTICUT

W. J. CONNELL CO. OF HARTFORD
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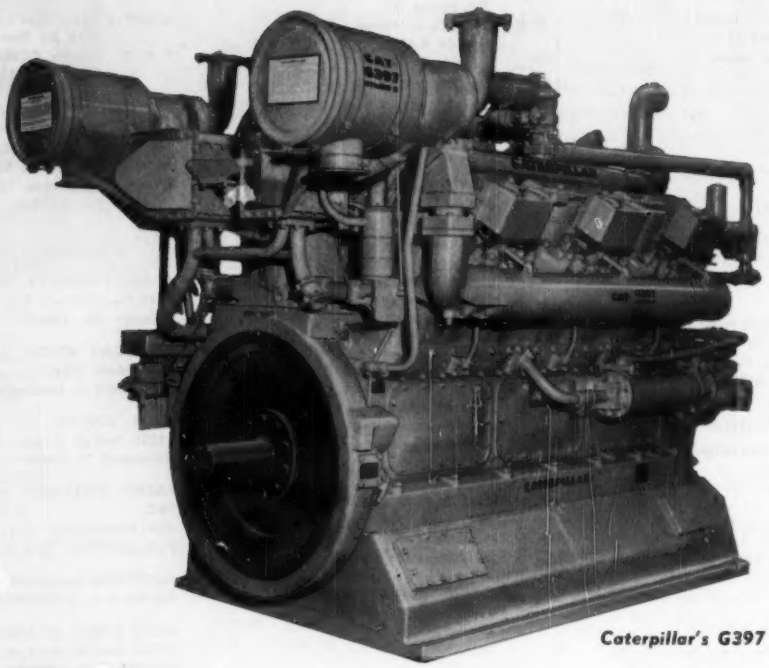


Caterpillar's G397

CAT boosts gas engine ratings

Substantial increases in continuous power ratings announced. Made possible without sacrifice in durability by application of latest technological advancements in materials and techniques developed through Caterpillar research and proven in service.

Increased horsepower ratings have been announced for Caterpillar's line of spark-ignition, gaseous-fuel engines. Turbocharging and aftercooling is responsible for the increased output. Cat points with pride to the low-cost operation of their naturally-aspirated models and says that these higher-output models will provide even more economies for engine users.

Three models are involved, the G342, G375 and G397. Naturally-aspirated, they are rated 235-hp, 310-hp and 470-hp respectively. Turbocharged and aftercooled they are rated 280-hp, 380-hp and 560-hp respectively. These ratings are all for the basic engine at 1300-rpm (60°F at sea level) and when using the 10.5:1 compression pistons. Naturally-aspirated models at somewhat lower ratings are available using a piston giving a 7.5:1 compression ratio.

As to operating economy, Fred Jacobs, Caterpillar Engine Division's sales manager, states, "Records showing fuel consumption at the rate of approximately 7000 Btu (LHV) per-bhp-hr continuously gives ample proof of performance. Our laboratory tests show that by turbocharging and after-cooling these units the fuel consumption is even less and so far, field installations have proved this to be true."

With some assurance of higher output and better economy, the next question is—What about service life at higher ratings? Cat says they have the same long life as the naturally-aspirated models and points first to their . . . . .

Concept of Gas Engine Design

Apparently, Cat feels that "maximum rated output" and "continuous rating" are synonomous for these engines. Mr. Jacobs stated that while the practice of derating engines to 65% to 80% of maximum output for continuous operation was valid 25 years ago, this no longer applies. Use of all technological advances in materials and techniques is credited as making this unnecessary.

Cat's approach was to base their spark-ignition engine on a heavy-duty diesel engine design. These had proven that they could operate successfully at continuous loads with high bmep's. These loads were carried with a 15:1 compression ratio and a manifold pressure of 55-in. Hg, absolute.

Bearings as well as all other highly-stressed parts are therefore very adequate in the spark-ignition engines with lower compression ratios and only about 28-in. Hg (absolute) manifold pressure. Compressive loads of the 7.5:1 compression-ratio engine are only about 25% of the diesel's. Even with the 10.5:1 ratio, maximum firing pressures are considerably lower than for the turbocharged diesel.

By basing their gas engine on the diesel's structure that encorporated all advancements in materials and techniques, long service life was assured. Pressures and temperatures encountered are far below the engine's design limits.

	G342	G375	G397
Cylinders	6	V-8	V-12
Bore & Stroke	5.75 x 8	5.75 x 8	5.75 x 8
Comp. Ratios	10.5:1 7.5:1	10.5:1 7.5:1	10.5:1 7.5:1
BHP*	210	275	415
BHP**	235	310	470
BHP***	280	380	560
Max. Torque 10.5:1, 700 rpm, ft lb	1050	1350	2000

* Basic Engine at 1300 rpm (60°F at sea level), 7.5:1 compression ratio

** Basic Engine at 1300 rpm (60°F at sea level), 10.5:1 compression ratio

*** Basic Engine at 1200 rpm (60°F at sea level), 10.5:1 compression ratio, turbocharged and aftercooled.

What Advancements?

Problems of getting good service life at high engine output usually revolve around handling the accompanying high pressures and temperatures. Here are some of the chief items, principally concerned with the rotating and reciprocating parts, that Cat gives credit for solution of the problem.

Heat treatments, special machining and materials used in crankshafts and bearings permit them to stand high loading. A select alloy steel processed to rigid specifications is used in the crankshafts. Journals are induction-hardened to Shore 54-62 to a depth of approximately 0.150-in. and then superfinished by micro honing. Fillets have large radii and are carefully ground and polished.

Shafts are both statically and dynamically balanced for minimum vibration. Torsional stresses are controlled through use of torsional vibration dampers.

Steel-backed aluminum bearings are used. More than a decade ago Caterpillar decided that babbitts lacked sufficient load-carrying ability. Development of aluminum bearing materials with their high load-carrying ability was pioneered. Today Cat feels that these bearings have the qualities needed for modern high-output engines when used with crankshafts having compatible hardened and polished journals. Wear rates even under high loads are proving extremely low.

Pistons were designed with the high temperatures and pressures in mind. They are permanent-mold aluminum castings with a cast-in iron top ring band. Sections are designed for both strength and heat dissipation. Also, oil jet cooling is used on the piston head's underside.

For good heat dissipation, liners are water-cooled for their full length. For good wearing characteristics, the ID's are "Hi-Electro" hardened to a depth of approximately 0.060-in. to Rockwell C 47-55.

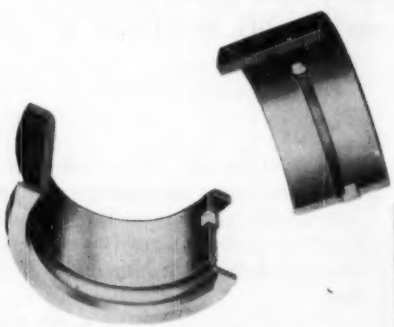
There are, of course, many other design features that contribute to overall success of the engine. However, Cat points to these as the chief items responsible for ability of these engines to pull full power continuously without affecting service life. And this at the new, higher ratings.

Turbocharging and Aftercooling

A walk through Caterpillar's Engine Division plant shows the extent to which they have gone to turbocharging. A very high percentage of engines, in fact, the bulk of those seen, had turbochargers installed. Aftercoolers are also much in evidence. The combined super-

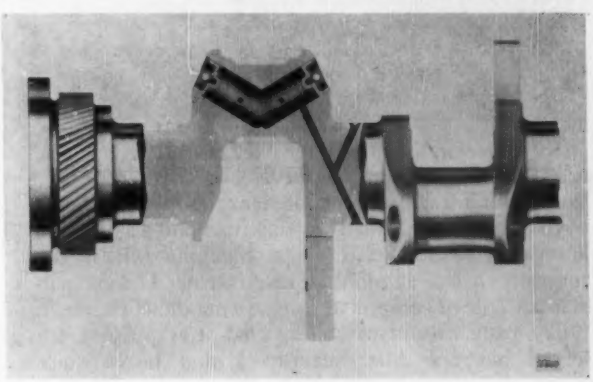
(Continued on page 49)

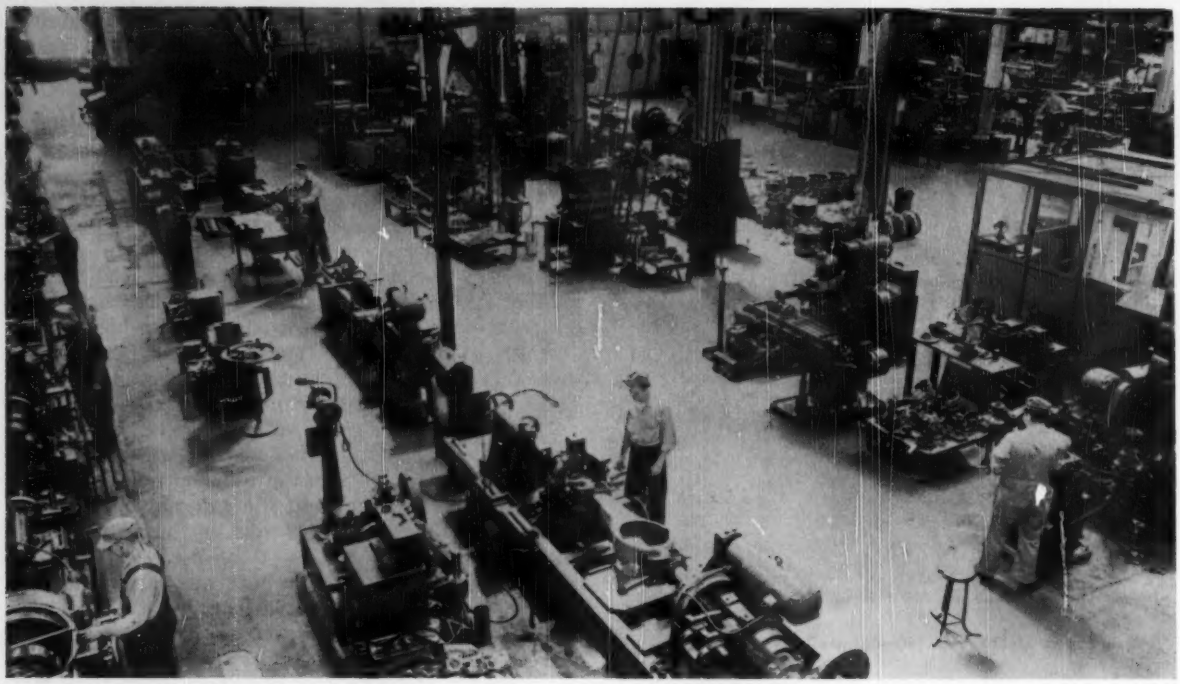
This is the CAT piston that gives a 10.5:1 comp. ratio with methane gases.



CAT's steel-backed aluminum bearing inserts have low wear rates.

Cutaway shows hardened journal area . . . CAT gave fillets large radii for extra safety.





General machine shop . . . used primarily for parts reclamation.

Bus Shop Takes On Outside Work

by Robert Dyment

Broader use of existing facilities benefits both the bus company and its customers. Higher usage factor pays out heavy tooling investment faster . . . provides steadier work load. Availability of quality work source benefits the smaller operator who cannot justify investment in complete shop facilities.

Niagara Frontier Transit System, Inc. of Buffalo, N. Y., a privately-owned public bus transportation system, has expanded into a new field—maintenance of truck and heavy equipment fleets. Reason behind the move is that NFT's modern, completely-equipped Cold Spring maintenance facility has excess capacity available.

NFT vice-president Walter McCausland said, "The extra service program was developed to increase the load factor for (1) our maintenance employes who as a group have special skills in this field and (2) for the heavy-duty diesel service equipment in which the company has a substantial investment. This is particularly true of equipment for servicing diesel engines."

Company executives believe that it is possible for school bus operators, heavy-truck and heavy-equipment operators to cut maintenance costs with NFT's complete, expert maintenance, repair and rebuilding program for tractors, trucks, road machinery and buses. Plus their many years of experience, they have what has been called Western New York's largest, best-equipped shop.

Experience galore . . .

Niagara Frontier Transit System provides local and suburban service to Buffalo and Niagara Falls, extending through the Tonawandas and to Youngstown and Lewiston. They operate a fleet of 611 buses, 545 of them diesels powered by GM 6-71's and Mack END 673 engines, in regularly-scheduled service and for charter. The trend is toward all-diesel operation.

Under the direction of Roswell F. Thoma, president of NFT which came into being in 1950, $13,680,000 has been spent for new buses, 244 of which were acquired in the last five years. Thus the maintenance men have opportunity to keep up with the latest in engines and knowhow.

Meeting the exacting requirements of heavy-duty maintenance and repair of over 600 vehicles covering 18-million miles per year has built up a lot of experience. NFT feels that this is one of their best selling points for this expanded service.

They have been doing and will continue some outside servicing of school buses. Also, Mr. McClausland said, "Maintenance repair work has been performed on various types and makes of bulldozers, loaders, graders and trucks. A substantial volume of repeat orders indicates that the customers whom we have served thus far have been well pleased with our work."

Services Offered . . .

NFT's modern facilities are completely equipped for servicing, repairing and rebuilding operations. Everything from individual unit or parts jobs to total body and engine reconditioning is offered. Customers can schedule routine fleet lubrication and periodic PM inspections for hours when their vehicles are not normally working. The PM system is geared to forestall road failures and by catching troubles early, avoid heavy repair costs.

Repair and rebuilding work can be part of a complete maintenance program or a spot job. In any case, facilities are there for one-stop service of major or minor troubles in any part of the machine from front bumper to tailpipe, wheels to roof.

Parts reclamation is another service. Welding, metal spray, grinding and machining are available for this purpose. Crankshafts are reground and most makes of camshafts can be rebuilt and reground. This is thought to be the only facility in Western New York for camshaft reclamation.

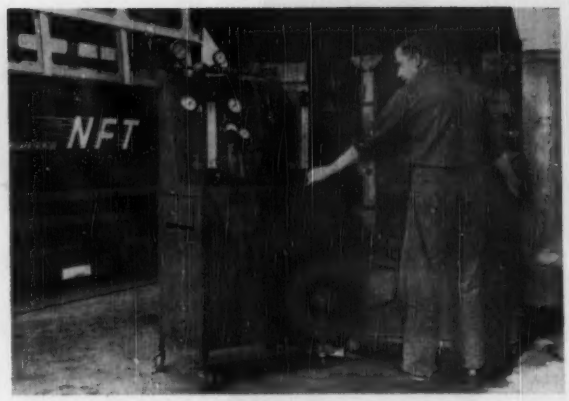
In another phase of the expanded program, NFT encourages operators who are thinking of scrapping or trading equipment to obtain free estimates for complete rebuilding to "like-new" performance. Savings of 50% or more are often possible through a combination of reclamation of worn parts and replacement of those beyond repair. "Problem jobs" are a specialty.

Customers also get free information on lubrication, inspections and preventive maintenance, major or minor repairs and data on reclamation and rebuilding. Above all, they get NFT's guarantee of satisfaction.

Such programs make sense . . .

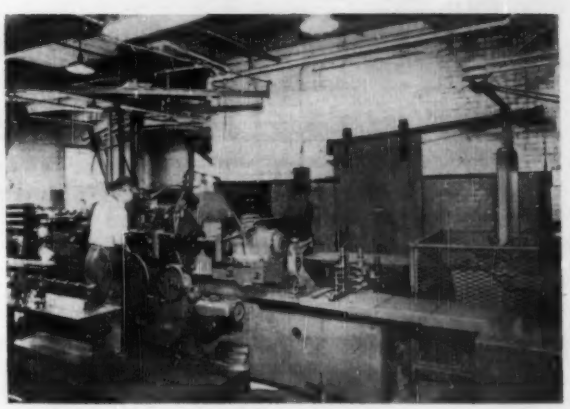
Mr. McClausland stated, "Whether a company operates one vehicle or a large diesel fleet . . . whether they have minimum service facilities or a large shop with only occasional jobs beyond their capabilities . . . NFT's complete, expert maintenance, repair and rebuilding service can and does help cut their maintenance costs."

Such programs are a good deal for both the service organization and for the small operator. The service

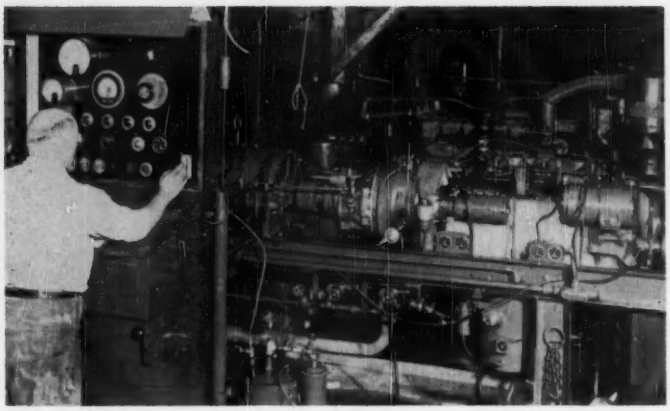


Mobile diagnosis kit permits checkout of engine systems . . . pinpoints troubles.

Engine rebuilding section . . . clean, complete, convenient to promote quality work.



Crankshaft grinder restores shaft geometry at practical standard undersizes.

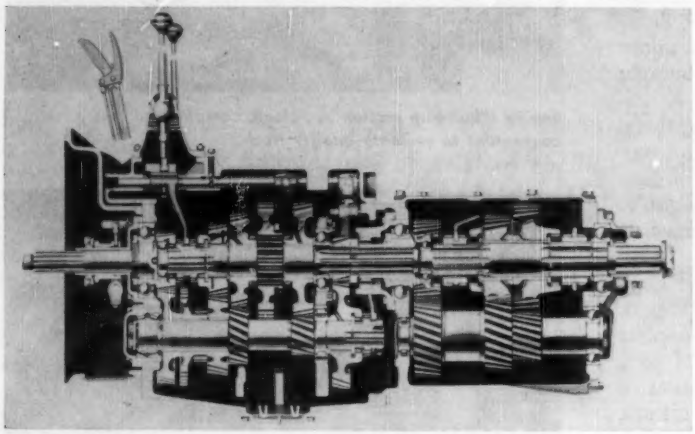


Power-proving rebuilt engines on dynamometer verifies work quality; Break-in assures that engines are ready to go to work.

shop benefits through a greater volume of work and a higher percentage of utility of expensive tooling. Their personnel has a steadier work load, develops greater experience and knowhow. The large organization offers opportunity for better work through specialization. And maintenance of today's highly-developed machines can be complicated.

The customer, particularly the small operator, can contract his maintenance. He gets good work and is relieved of the investment in a shop of his own. The small shop with a limited work load is always a headache. The problem is how far is it economic to go and the tendency is to stretch into jobs they are not equipped to handle properly. Also, a few men must be experts in everything, something unreasonable to expect.

With more and more diesel-powered equipment going into service, maintenance facilities must grow too if downtime is to be kept to minimum levels. If you have a big well-equipped shop with excess capacity and machine time, you might think of expanding to contract maintenance. If you're a small operator conscious of the need for maintenance—and you'd better be—you might find it cheaper and better to contract your maintenance rather than building up your own shop.



Fuller's new Model 15-G-1120 15-speed transmission.

Combination On-Off Highway Transmission

If you're running heavy-duty diesel trucks and tractors with engines in the 1120 cu-in. class, here's a couple of new 15-speed transmissions that are really designed for your particular operation! New models 15-G-1120 and 15-H-1120 transmissions from Fuller Manufacturing Company have some attractive built-in features for rugged on/off-highway combination use. For one thing, these new 15-speed heavy-duty transmissions will let you shorten up your tractor wheelbases if you're now running with main and auxiliary transmissions. These new Fuller models come in compact, tightened-up installations dimensions.

Talk about flexibility, these Fuller Transmissions really have it. You get 10 closely-spaced gear splits . . . plus 5 speeds in the low range operation through a deep reduction in the auxiliary. Interested in odd gear ratios? Well, you can get 'em—Fuller's new transmissions' are available in a wide choice of optionals. Ratios of the 15-G-1120 vary from .64:1 in highest gear to 17.25:1 in lowest gear range.

A precision-built injector designed for a GM Diesel engine

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production line maintenance may be your answer . . .

by C. W. Kinnear

Roy McAllister . . . with his handy EMD gasket rack.

If parts window traffic jams are plaguing your operation . . . if you've got different men attempting different jobs at same time and place . . . if back-and-fourth running for tools is robbing valuable production time, here's an idea for your shop . . .

Looking around for a way to speed up maintenance at their shop in Ogden, Utah, the Southern Pacific Railroad borrowed a trick from Madison Avenue—brainstorming.

Out of the brainstorming session came a simple but sound idea from Relief Foreman, Roy McAllister. "Why not," he asked, "bring the work to the men, rather than the men to the work?" McAllister calls his system "Spot Maintenance". And heart of this new idea is to move SP's diesel locomotives to his men—rather than requiring the men to go to the locomotives.

This disceptively simple idea has saved Southern Pacific thousands of dollars during recent months. For one thing, its ended traffic jams at parts windows . . . its stopped the tendency, all too common in maintenance shops, of too many hands in the same places trying to finish different jobs . . . and last but not least SP's "Spot Maintenance" system has cut out the familiar picture of a mechanic lugging his tools back-and-forth across the shop, or hunting down the strayed socket wrench.

SP's Spot Plan In Action . . .

Here's how SP put their diesel locomotives on a production line basis—put McAllister's plan into action. First, they converted a portion of their Ogden shop,

utilizing three tracks at one end of the old transverse steam locomotive erecting shop. These tracks were extended approximately 125-ft, with a roof over the new section and enclosed with side walls and an end wall with end exit doors. This provided space for four "spots" on each of the three tracks which are about 228-ft long.

On one track all annual inspection and work is done. On the other track all quarterly and semi-annual inspection and work is performed. On the middle track, monthly as well as running repairs—such as removal of cylinder heads or liners due to water leaks, are carried out.

As in any assembly line set up, the locomotive unit is moved into and through each of the four "spots" by energizing one traction motor from an outside source or by use of a tractor. Typical of the work done on the different spots is that scheduled on the track where all annual work is accomplished.

Spot No. ***Work Scheduled—Principal Items***

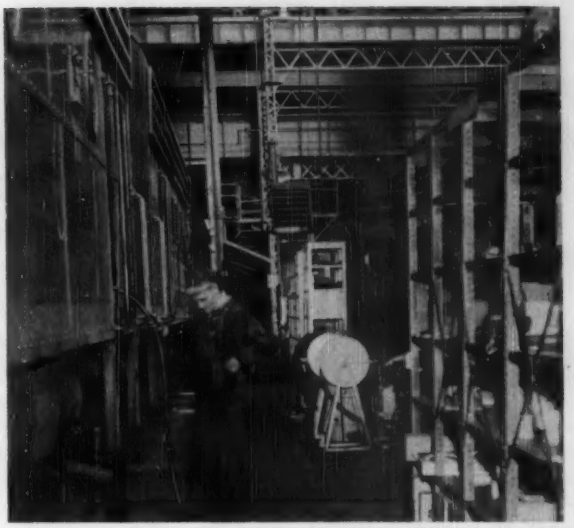
1. Blow dirt and dust out of unit, including radiators, dynamic brake grids, and electrical equipment. Removal of air brake equipment, including air reservoirs—Drain oil and water.
2. Check motor support bearings and lubricators—Examine all motor brushes—Clean and repair wires, connectors, and electrical items—Put up air reservoirs.
3. Remove roof hatch—Change power Assemblies and oil cooler—Reapply roof hatch. Perform miscellaneous work required, such as diaphragms, buffers and couplers.
4. Drop and check main bearings, change out as necessary—Clean crankcase and purge (flush) engine—Fill with water and oil—Reapply air brake equipment—Make sequence test of electrical equipment.
5. (Outside building)—Make Load Test if necessary.

Tools Get Colors . . . So Do Parts!

Tools, racks and other equipment used to accomplish the particular jobs at each "spot" are painted different colors: *Red* for No. 1, *Yellow* for No. 2, *Green* for No. 3, and *Blue* for No. 4, "spots". This color scheme was devised to keep the tools adapted to the particular jobs done at each "spot" where they belong. For instance, SP discovered that a Red or Yellow tool being used in a Green section is easily noticeable—will be quickly returned to where it belongs. Material racks (painted the appropriate color for the "spot") are stocked with all the tools and parts necessary for the operation of that particular "spot".

Work Done Off "Spot" Line . . .

But not all maintenance is done on SP's new production line. To keep it running smoothly, back-up work is performed off the production line. When it's necessary to remove an entire engine or main generator the locomotive isn't run through the "spot" system line. Engines are either repaired at Ogden for such limited repairs as spring pack in accessory end, renew gear bushings, etc., or they are sent to Los Angeles General Shops for rebuilding.



Lubricating oil hose station on SP's 4-spot line.

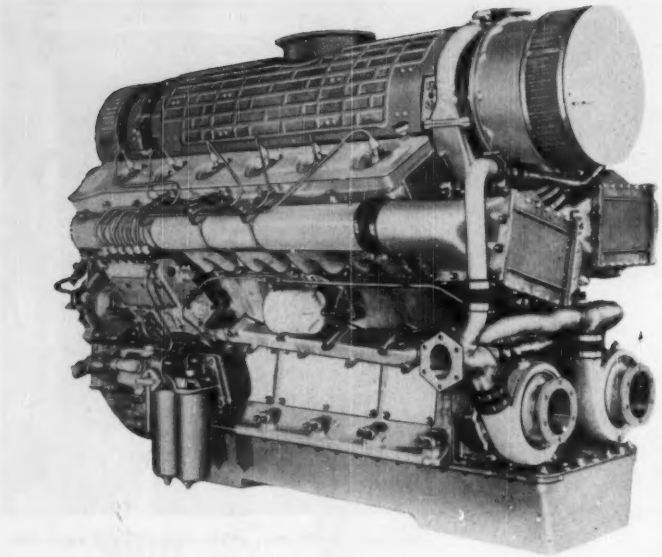
Other components, such as complete assemblies, governors, injectors, blowers, etc., are sent to Sacramento for reconditioning. Traction motors and other motors are sent elsewhere for general repairs. Auxiliary equipment, both mechanical and electrical, is cleaned and repaired in so far as possible in place on the unit, however if defects are found to the extent that this can not be done, the part or assembly is removed and reconditioned at Ogden or elsewhere according to nature and extent of defect.

These practices necessitate a spare parts pool at Ogden and enroute. The air brake material removed on "spot" No. 1 is placed in a pool of these parts which are cleaned and repaired at Ogden shop. Air compressor work is done without removing compressor.

Traction motor and truck work is done when it is necessary to remove wheels for wear, or for other defects. When this is done the truck is replaced by a similar truck and sent to the Truck Shop.

SP's Idea Is Catching On . . .

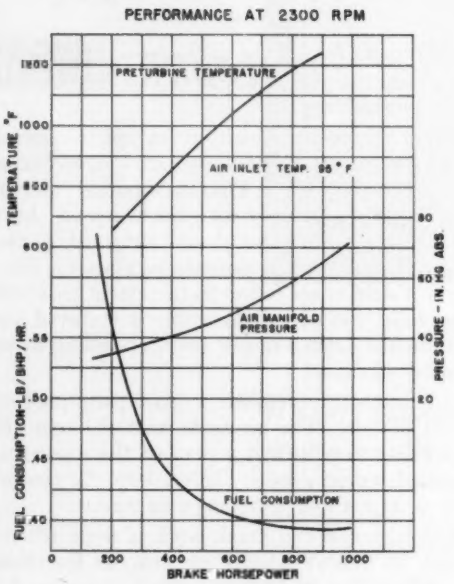
Recently the New York Central Railroad has also adopted similar spot-line maintenance systems at their DeWitt Shop in East Syracuse . . . and at their Collinwood Diesel Shop in Cleveland. Looks like production-line maintenance is catching on! It certainly has many attractive features to recommend itself—better utilization of maintenance personnel, more efficient location of tools and spare parts. All adding up to a thing we're all looking for—less downtime and lower maintenance costs. Take a good, careful appraisal of your own shop—see if there aren't ways you can cut out the waste motions and put your shop on at least a semi-production line basis.



Curtiss-Wright's NEW "12V-142"

C-W engineers started with the concept of a high-output, light-weight, compact diesel engine. Here's the result —

Hp per cu in. displacement	**0.53**
Hp per cu ft of engine	**9.6**
Marine version, lb per hp, 900 hp net continuous with all installed accessories	**4.5**



Specifications for 12-cyl, 60-deg vee-type Engine

Rating, continuous hp	900 at 2300 rpm
Bmep at this rating	181 psi
Torque at 2300 rpm	2060 ft lb
Bore & stroke, in.	5-3/8 x 6-1/4
Displacement, cu in.	1704
Compression ratio	14.5 : 1
Combustion system	prechamber
Governor	hydraulic
Length, overall, in.	79-7/16
Height, overall, in.	53-3/8
Width, overall, in.	43
Weight (with attached accessories)	4050 lb

CURTISS-WRIGHT'S 12V-142 is first of a projected family of advanced-design, liquid-cooled 4-cycle diesel engines. Specifications of this engine are given and include a continuous marine rating of 900 bhp at 2300 rpm with raw water-cooled aftercoolers. In other applications, ratings will vary with the degree of after-cooling.

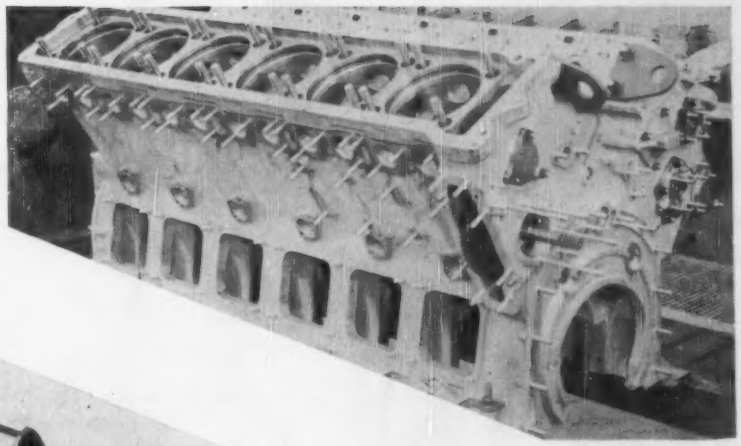
Very low specific weight was obtained by careful selection of materials and design analysis. Yet there was no sacrifice in durability and a minimum of non-functional machining. Attention to accessory location kept overall size to a minimum. Yet accessibility and ease of maintenance was retained. Typically, timing index points replace marked gear teeth to simplify retiming of camshafts and fuel injection pumps.

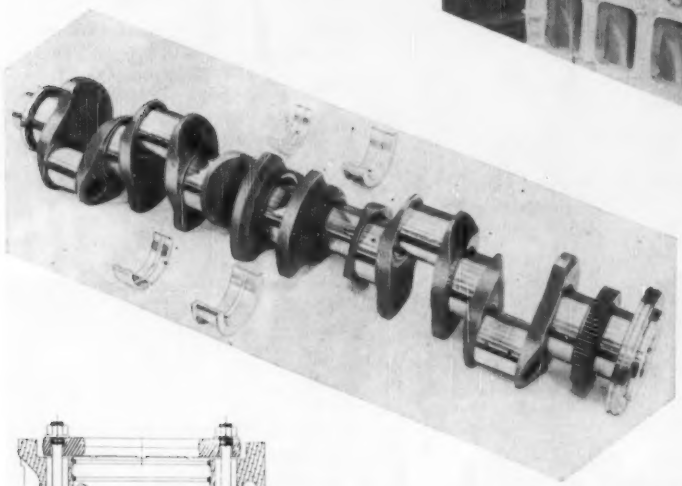
For maximum adaptability, the drive end was designed for flywheel and housing interchangeability without disturbance of the rest of the engine. Either one or two engine starters can be used depending on the driven-machinery load. Engines can have wet or dry sumps by simply changing the oil pan. Drives for both fresh and raw water pumps are provided for different cooling system requirements.

Advanced design features are based on long experience in the field of lightweight engines requiring a high degree of reliability. The combustion system developed contributes clean burning at low specific fuel consumption. The precombustion chamber, water-cooled to protect the injection nozzle, confines high and erratic shock waves of initial ignition. The communicating "burner" of special alloy stores heat to aid vaporization of fuel. Together they function well and also permit lightweight construction and high-speed operation.

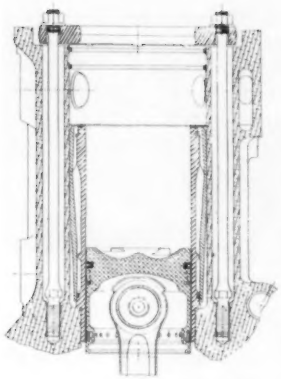
Altogether, this is an impressive new entry in this horsepower range.

Start with a unit-cast aluminum block and crankcase, deep-skirted, heavily ribbed for strength and rigidity. Deep forged aluminum main bearing caps are held by vertical studs and clamped by lateral bolts to form a rigid box section. Steel-tube main oil gallery is cast in block at bottom of vee . . . distribution passages are drilled. To assure gear train alignment, compartment is cast in block.

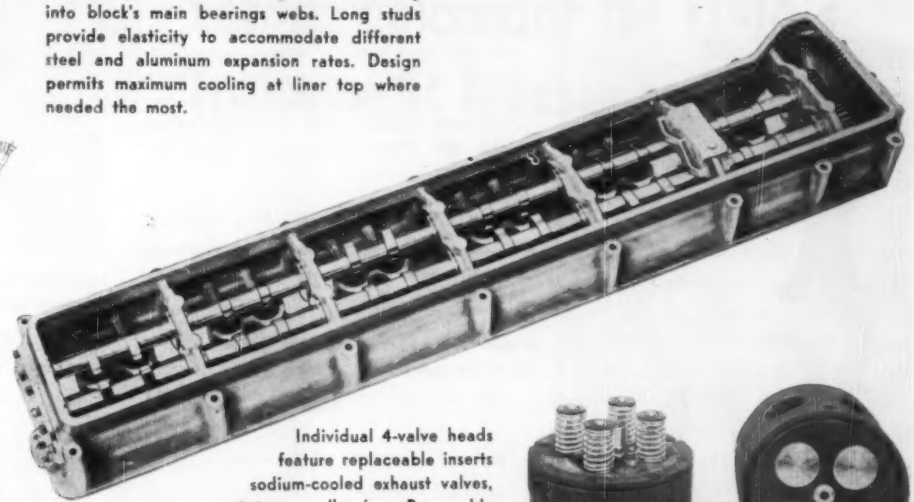


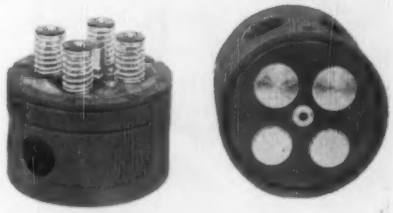


Forged 7-bearing crankshaft with integral counterweights has large diameter mains and crankpins, reducing unit loading. Stiffness is improved by 1⅛-in. overlap plus use of re-entrant fillets to minimize length. Nitrided overall for high endurance life . . . fully drilled for oil distribution. Accessory drive gear is forged integrally . . . pressed-on aluminum slinger working in vented labyrinth solves perennial rear main seal problem. Bearings are solid aluminum . . . high load capacity, good heat transfer, expansion rate similar to block. A viscous-fluid torsional vibration damper fits on shaft's free end.



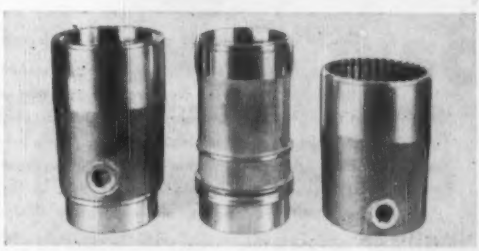
Head-liner unit is retained by forged steel retention plate and four long studs extending into block's main bearings webs. Long studs provide elasticity to accommodate different steel and aluminum expansion rates. Design permits maximum cooling at liner top where needed the most.



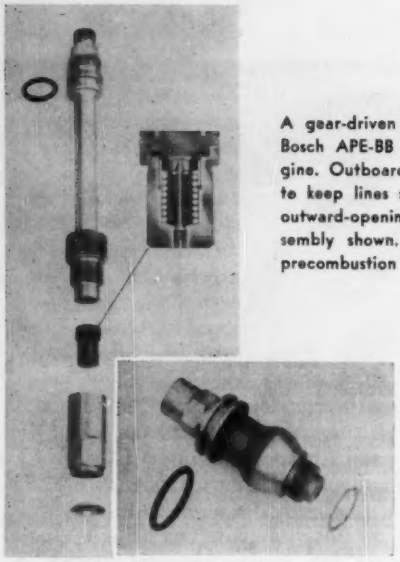


Individual 4-valve heads feature replaceable inserts sodium-cooled exhaust valves, rotators on all valves. Removable precombustion chamber is in center. Note ring of water passages that mate with liner.

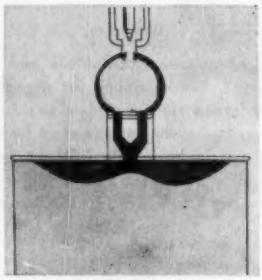
Camshaft housing assembly has separate intake and exhaust camshafts. Hydraulic valve tappets compensate for expansion in valve gear and aluminum block . . . eliminate lash checks.



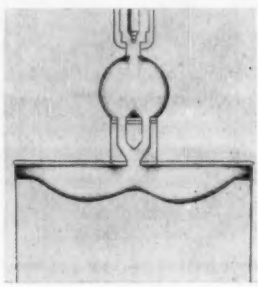
Liners are steel forgings, nitrided for long life. Removable water jacket contains coolant, eliminating block corrosion. Stiff assembly design cuts liner vibration and cavitation tendency. Lower flange seats on shoulder in block.



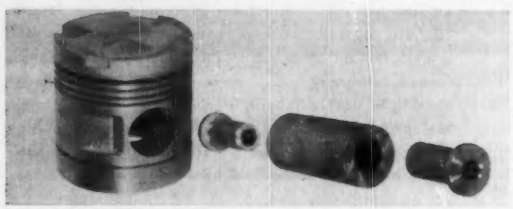
A gear-driven supply pump feeds two American Bosch APE-BB 6-plunger pumps, one seen on engine. Outboard mounting is for accessibility . . . to keep lines short. Capsule nozzle of single-hole, outward-opening type is mounted in holder assembly shown. Atomized spray enters removable precombustion chamber in center of head.



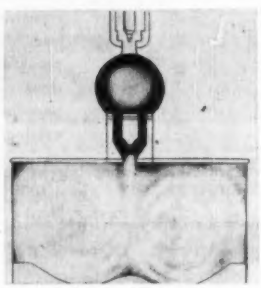
Atomized fuel and air starts to burn, raising temperature and pressure, until mixture, including still unburned fuel . . .



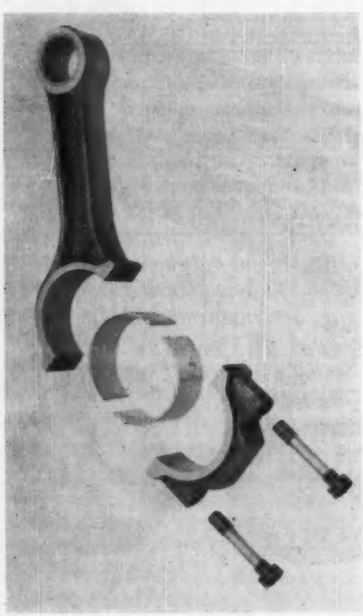
is forced through multi-orifice burner in a high-velocity jet. Piston's dispersing cone causes jet to mushroom . . .



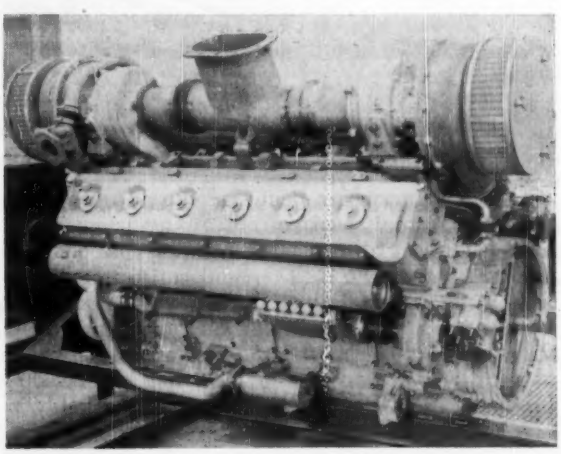
Pistons are cast aluminum with Ni-Resist top-groove insert. Cam grinding gives better fit with liner when both are hot and under load. Piston's top land is chrome plated to prevent scuffing . . . top ring is chrome faced. Spherically-faced aluminum plugs retain full-floating piston pin. Piston's underside is cooled by lube oil spray.



as piston is forced down. Resultant thorough mixing assures complete, clean burning.



Alloy-steel forged rods are identical for both banks. Side-by-side arrangement is used . . . can be removed through liner as result of 45-deg cap split. Precision, strip-type aluminum bearings are at big end; bronze bushing at pin eye.



Twin aircooled AiResearch turbochargers mount on exhaust manifolds. Both turbines discharge to common outlet. Flexible bellows in exhaust manifolds and discharge duct compensate for thermal expansion. Heat shields are above and below uncooled exhaust manifolds. Blower outlets connect to aftercoolers (seen on complete engine) that in turn connect to intake manifolds. Engine oil, separately filtered, lubricates turbos.

Allis-Chalmers Selects Twin Disc Torque Converter for TL-14's Tractomatic Transmission

EIGHTEEN YEARS AGO Allis-Chalmers introduced the first torque converter drive in a crawler tractor. That original unit featured a Twin Disc converter, and the same is true of many present-day Allis-Chalmers construction machines. For the optional Tractomatic Transmission in the new TL-14 Tractoloader, Allis-Chalmers engineers have once again incorporated a Twin Disc Torque Converter.

This transmission provides the key advantage of power shifting in a simpler, more economical unit. A direction control lever on the steering column actuates forward and reverse clutches hydraulically — changes directions without clutching, shifting gears, or stopping the machine.

Since reverse speeds are 30% faster than forward, reversing the machine automatically increases its speed. This eliminates the usual necessity of shifting gears manually to achieve the same effect.

The Tractomatic transmission has four speeds in both forward and reverse. On short haul loading and stockpiling jobs, it is seldom if ever necessary to change speeds once the proper ratio is selected.

A Twin Disc Single-Stage Torque Converter is an integral part of this transmission. Besides increasing torque automatically as needed, the converter permits rapid clutch engagement and absorbs the shock of the shift in its whirling fluid.

A test of the TL-14 Tractoloader at your Allis-Chalmers dealer will demonstrate why so many of America's leading earth-moving equipment manufacturers are standardizing on Twin Disc Torque Converter Drive.

TWIN DISC

TWIN DISC
Torque Converters

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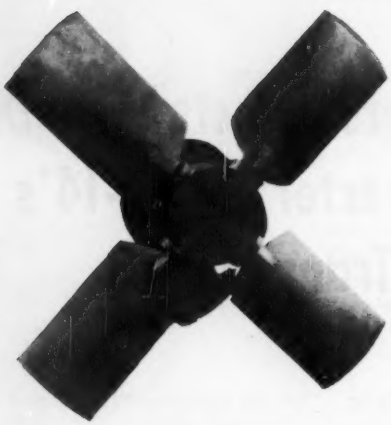
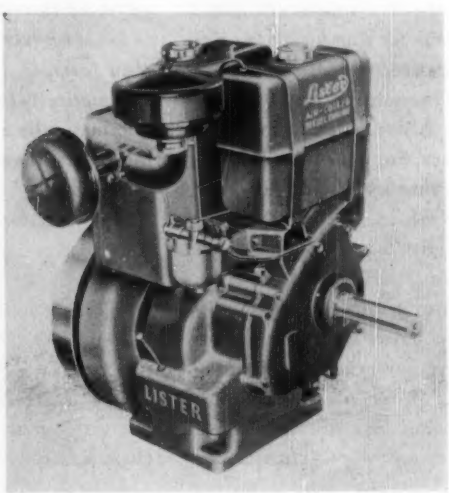


Vari-Pitch Fan From Hilliker-Werner Company pays for itself in fuel savings alone! H-W's fan offers truckers continuous controlled engine temperature—blade modulations from zero to maximum pitch (according to your coolant temperature) keep your engine always at optimum temperature. Stops horsepower stealing—common crime of ordinary fans. Effectively simple design has kept both weight and cost low—Vari-Pitch actually weighs less than fan it replaces! New model for Mack B61 and B71 has been added to those for GM and Cummins engines in various truck models.



Lister-Blackstone's models SL 1 and SL 2 are now available at 2000 rpm. Model SL 1 is now rated 4.75 bhp at 2000 rpm, and model SL 2 rated 9.5 bhp at 2000 rpm. Model shown here is Lister-Blackstone's single-cylinder SL 1.

Use your dp Reader Service Card.

MORE NEW PRODUCTS FOLLOW ►

NEW PRODUCTS . . .

Vibration Censor Senses Trouble

Model 2900 Vibration Valve is the latest addition to the Amot Controls Corporation line of safety and automatic system components. Employed as a 2 or 3-way, snap acting, non-overlap vibration monitoring valve on pnetmatic or hydraulic control systems to 80-psi, the unit is adaptable to engines, compressors, fans, motors and other rotating or reciprocating equipment. Model 2900 may be applied as an accessory to the 1476 line of basic Amot controls, or it may be used by itself to energize auxiliary devices. Sensitivity of the valve is manually adjustable and it is sensitive to vibration from any direction in the plane perpendicular to its longitudinal axis. An internal cylinder is provided in the standard Model 2900 which will reset the tripping mechanism, with the application of 40 to 80 psi. The reset cylinder may also be used in a time-delay circuit to prevent tripping of the valve on high amplitude vibrations during start-up.

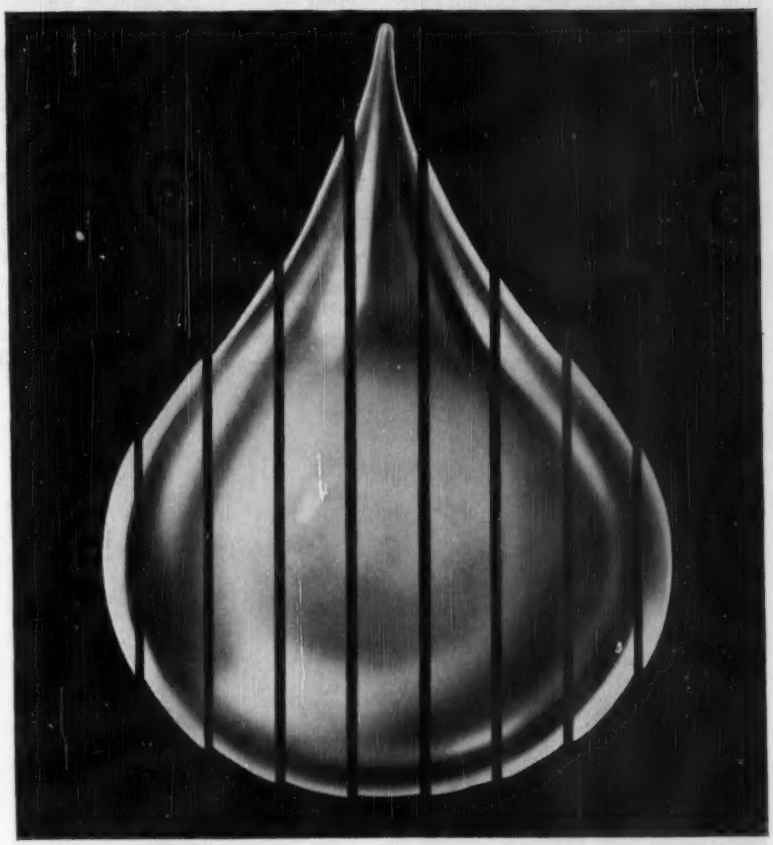
Use your dp Reader Service Card.

Lets One Man Change Truck Tires!

An easily portable, low cost dual wheel dolly for buses, trucks or tractors, which permits quick one-man removal and replacement of any dual wheel combination up to 6.50 to 12.00 (even on rough floors, dirt, sand or roadside) is now available from Alexander-Tagg Industries. Easily stored or carried, dolly weighs only 46-lb. Has a rated capacity of 2000-lb and 40" ball-bearing trolley travel, allowing plenty of working room without removing the wheels from the dolly. A less expensive, lighter weight swivel-caster dolly for use on hard surfaces is also available.

(Continued on page 40)

HOW THIN can you



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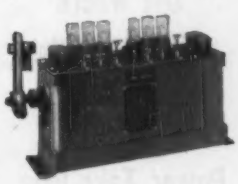

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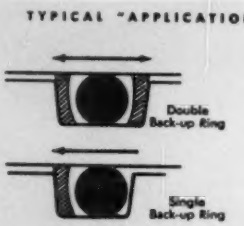
(Continued from page 39)



Back-Up Rings For Better Sealing

Parker Seal Company has developed a line of continuous back-up rings for O-ring-in groove installations. "Parbaks" are said to increase O-ring life and effectiveness. They're quickly and easily installed and are low in cost—up to 50% less than normal types it is reported. These new back-up rings are designed with a concave shape to prevent O-ring extrustion and increase lubrication of the O-ring. They are continuous one-piece rings (without spiral or cuts). Thus they avoid the possibility of cutting O-rings due to improper installation or worn back-ups. Parbaks may be used in all standard pressure systems and have a range from −85°F. to +350°F.

"Diesel Pep"

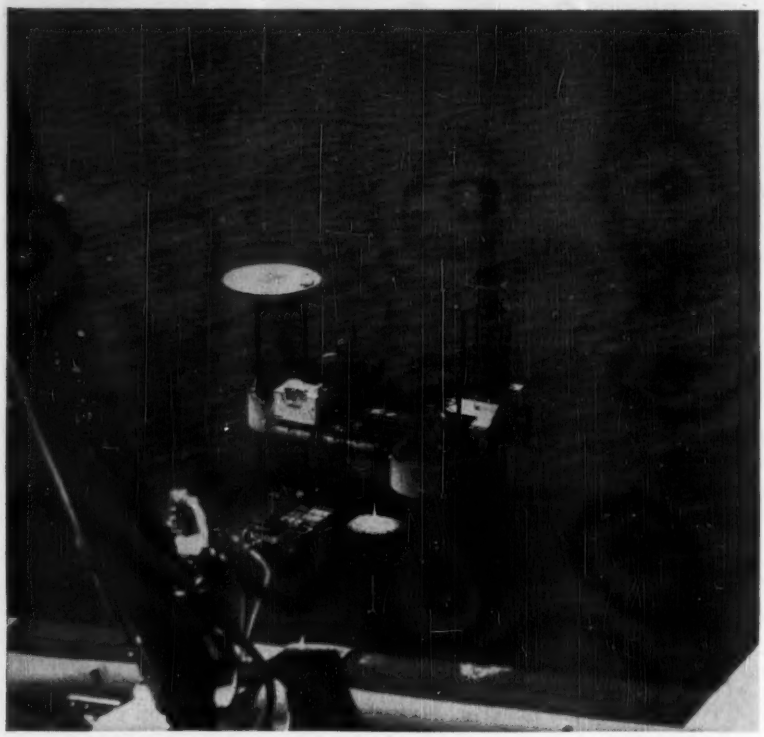
That's the name of a new product from Spray Products Corporation. "Diesel Pep" is used by simply adding the required quantity to the fuel tank at any temperature and then operating the engine in the regular way. "Diesel Pep" it is claimed will keep injectors, screens, filters and fuel pumps clean . . . improve combustion, disperse water and keep fuel lines open . . . will prevent rust and acid formations, remove gum and varnish, reduce engine wear, eliminate wax, sludge and other harmful deposits and minimize smoking. Sounds almost like the second coming, doesn't it?

Use your dp Reader Service Card.

New Soft Gasket Compound

Here's a new fluorosilicone sponge rubber compound with a dense, uniform, non-absorbing closed cell structure that provides outstanding resistance to fuels and lubricants at extreme high temperatures. COHR Lastic 10530 is claimed to possess immunity to aging, ozone and weather hardening, excellent dielectric properties and good compression set resistance.

This new fluid resistant sponge, from Connecticut Hard Rubber Company is recommended for soft gasketing, vibration dampening, fairing strips, pads, cushions and other applications where there is extremely low or high temperatures with simultaneous exposure to fuels and oils.



Out where dependability counts . . . Rockford Power Take-Offs

Complete self contained units designed to make a hard job easier. Built for every type of stationary equipment. Handle 5,000 lb. thrusts with no external Bearing supports. Specified by more and more oil men for the right way to get more power per ounce of fuel. Write for complete details . . .

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Short, Short— Where's That Short?

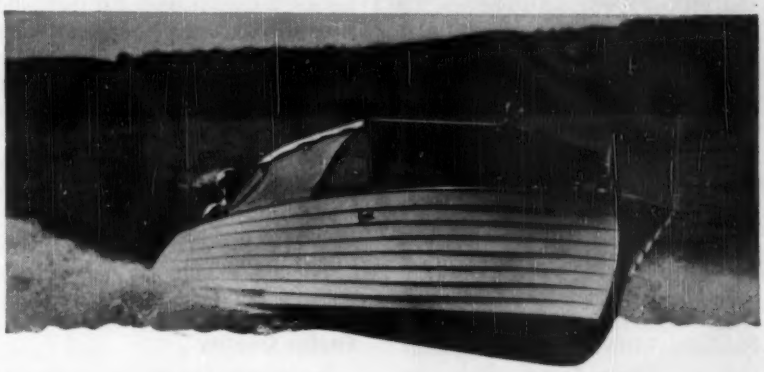
Borroughs Tool & Equipment Corporation, have a new pocket-size device that lets you find a "short" in a matter of a moment. To use, alligator clips are connected across the terminals of the burned out fuse or circuit breaker. Entire electrical system is thus protected against damage, so that all switches in the shorted circuit may then be turned on. Dial-like detector, free from any wire connections, is then placed over the car's wire routing near the fuse. This will deflect the dial needle, to right or left of center. As the wire routing is followed with the detector, the needle will continue to deflect. When it ceases to deflect, one way or the other, right there is your short! Intervening metal, such as posts, trim or sheet steel will not prevent the dial from finding the exact location of the short.

Allis-Chalmers Adds New Nat-Gas Engine

Allis-Chalmers has expanded its line of natural gas engines with the addition of the G-138. It's a new 4-cycle, 4-cyl, 138-cu. in. piston displacement unit that developes 39 bhp at 1800 rpm. The G-138 power unit is 46-in. long, 18 15/16-in. wide, and 30½-in. high to top of the radiator, making it a compact unit, ideally suited to serve many and varied fields where up to 39-hp is required. The engine weighs 402-lb and the power unit 622-lb. Among its applications are those identified with oil fields, construction, mining and quarrying; logging, sawmill and woodworking; irrigation and other pumping project; in agriculture, plus other fields where portable power units are used. Allis-Chalmers expects their G-138 to become a standard with Original Equipment Manufacturers using engines of this size.

Safety Shutdown Operates On Air Only

New non-electric "Calcon" safety control system from California Controls Company is sensitive to a wide range of temperatures, pressures (or both in combination). "Calcon" operates through a small captive charge of compressed air . . . provides immediate, positive action response. When dumped to atmosphere by pressure or temperature-sensing devices, the system puts into operation almost any type of pilot-operated valve, switch, warning or other control. Senses pressures up to 2000 psi. Has its own source of pneumatic power, not dependent on outside power. Equipment required for a typical small diesel engine installation are (1) hand charging unit, (2) pressure sensing valve with charge air gauge, (3) temperature sensing valve, (4) actuating unit.



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diesel power » new literature

Report On New Import —DAF's Diesel Engine

If you're wondering what's what with the new DAF Dutch import, wonder no more—there's a whole folder-full of clear, concise literature on this new diesel import available just for the asking. Gives you all the particulars on DAF's new 4-cycle, 6-cyl engines that come in 100, 120 and 165-hp models . . . two normally-aspirated, the third turbocharged. There's also a brochure on DAF's modern production-line factory.

Use your dp Reader Service Card.

How to Filter It

Purolator's new booklet takes up, one-by-one, the various Purolator Products. Lists and details information on various filter media for process fluids, nuclear applications, internal combustion engines, hydraulic fluids, machine tool coolants, bulk fuel, and many other applications. Information provided covers explanation of flow rate, degree of filtration, viscosity of fluids, and reliability for such filtration media as Micronic ® "paper", metal edge, wire cloth, porous metal media, plus oil absorption and water separation filters, and specially-designed filtration units for high and low temperatures (from minus 420°F to plus 1200°F), high pressure, and corrosive gases and fluids. For each of the filter media covered in the new booklet, operating specifications are given for range of filtration, temperature limits, flow characteristics, and typical applications and assemblies are used to illustrate ranges.

How To Judge Engine Quality

If you're in the market for an engine—Caterpillar Tractor has a new 28-page handbook that you really should take a look at. Cat's "Judging Engine Quality" gives you a visual rundown on the features of the various designs which give you top performance for minimum cost. This handbook discusses in detail the importance of, and factors involved with: 1. Judging the design, material and workmanship 2. Judging the reliability 3. Judging the cost of operation 4. Judging parts and service availability 5. Judging trade-in or resale value.

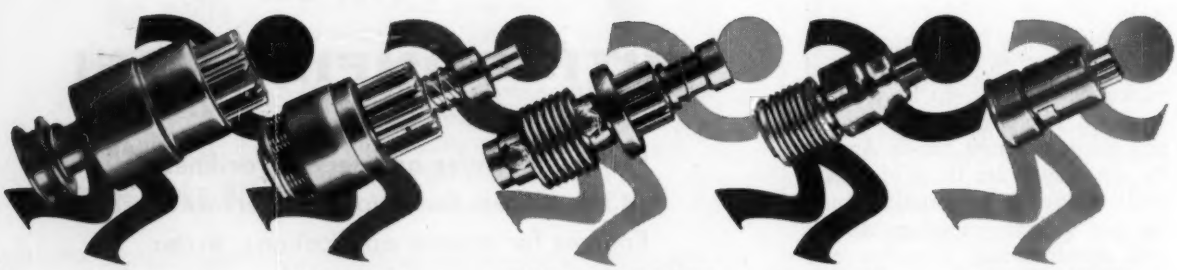
This 28-pager has cutaway illustrations that compare four and 2-cycle operation . . . multiple and single orifice injection valves . . . precombustion chamber and direct injection of fuels . . . and many other items that you have to consider when selecting an engine.

"Biddle Instruments For Industry"

This 12-pager is chockful of Biddle's instruments—you'll find everything from frequency meters to tachometers and meggers . . . to name just a few! Gives you a good idea what's on Biddle's shelf.

Only the Bendix Line-Up

OFFERS A COMPLETE CHOICE OF STARTER DRIVES



POSITORK* CLUTCH DRIVE HEAVY-DUTY SPRING TYPE FOLO-THRU* RUBBER FOLO-THRU*

Regardless of the size of your diesel, there's a Bendix* Starter Drive that will provide the performance, economy, and dependability you need. For "surer" starts, be sure it's Bendix.

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Bendix-Elmira
Eclipse Machine Division
Elmira, N. Y.

Bendix
AVIATION CORPORATION

"Better Engine Protection With LE Engine Oils"

That's the title of a new booklet available from Lubrication Engineers, Inc. This 6-page, two-color folder was published by LE to describe why they feel there are advantages resulting from its use of the slower, more-expansive, so-called conventional method of refining. As explained in the new booklet, LE's use of the costlier, 8-step conventional method enables the Fort Worth firm to use crude oils with a higher paraffin content—paraffin which inhibits oxidation in internal combustion engines. Section of the new brochure is also devoted to a description of the blending of LE oils. Also discussed in the new booklet are money-saving applications of LE oils to the engines of today's heavy-duty equipment. Contains food for thought!

Use your dp Reader Service Card.

Nine New Ones From Minneapolis Moline

Take your pick or take 'em all! Here's a bundle of new brochures fresh off Minneapolis Moline's presses. You'll find a brochure on MM's M5, GV 1 and 4-Star tractors . . . a catalog sheet on their interesting Uni-Tractor . . . also covered are MM's Balemaster 760, Wheatland Disc Plows, Moldboard Plows, their Lo-spreader and the new 570 Customatic Combine. Gives you a complete, quick rundown on MM's diesel-powered farm line.

Clark's 110 psi Bal/Opposed Compressors

If you're after compressed air in volume, it'll pay you to study this new catalog from Clark Bros. on their compact Balanced/Opposed industrial air compressors. Models for 80 to 125 psi, 75 to 2000 bhp are covered—6-stroke sizes, 23 models in all to choose from!

Euclid's C-6 Hard At Work . . .

There's a new 24-page report just out on how Euclid's C-6 is performing out on the Pacific coast. This picture report shows the C-6 logging in Oregon up to the top of its tracks in water . . . lugging 7000-bd ft logs . . . clearing mountain slides . . . stump clearing . . . pushing blasted rock . . . and push-loading scrapers in hub-deep mud. Makes mighty interesting, informative reading.

Pure Oil's Truck Stop Directory

If you're running trucks anywhere along Pure Oil's Dakotas-to-Florida chain—if you are, there's a mighty fine new truck-stop directory available. In it you'll find photos of the various stops . . . a small detailed map giving exact truck stop location . . . as well as a complete listing of facilities you'll find at each stop. There's even a special icing facilities map included in this new Pure Oil truck pouch. Mighty handy thing for your drivers to have along!

Standard Pressed Steel's "Root of the Thread"

There's more to the screw thread than meets the eye, particularly for highly-stressed bolts such as those in connecting rods. "Achilles heel of properly made tension bolts and screws is the contour of the bottom (or root) of the screw thread," says SPS laboratories informative 20-page booklet. "This fact is only beginning to gain general acceptance . . . virtually ignored by major screw thread standards. Rapidly advancing extremes of operation—higher stresses, higher temperatures—and increasing demands for higher reliability . . . are forcing a re-evaluation of the root."

Very thorough and technically sound treatment of the problem. This booklet should be in your file if your fasteners have to hold up under high-temperature, high-stress conditions.

Now, at the Milwaukee Road, EMD, 567B and C cylinder heads are reconditioned at a rate of 58 per day — *quadrupling the former rate.*

At the core of this vastly improved production is a Model EDP *eccentric* valve seat grinder that produces seats with precision in 2 minutes, or 7 minutes per head. The *eccentric* grinding principle, and its benefits, are exclusive with Hall Toledo.

RETURN THIS COUPON FOR DETAILS

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Please send me complete details about applying the benefits of eccentric grinding to the following type of valve seat production:

Name_____

Title_____

Company_____

City_____ Zone_____, State_____

(Continued from page 15)

Two New Antifreezes Feature Longer-Term Protection

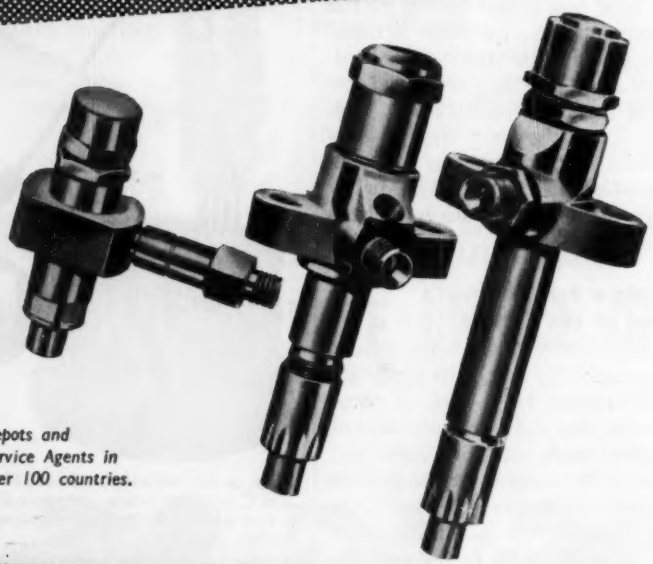
Both Dow Chemical and Du Pont have introduced new antifreezes for the passenger car market. Commercial users may want to take a look. Antifreeze capability is only one function, the other being superior cooling system protection.

Dow's product, Dowgard, takes the place of water in the system. It is suitable for both summer and winter use . . . lasts a full year. Year-round inhibition against rusting and corrosion plus winter protection against freezing is afforded. Retail price quoted is $2.25 per gal, installed.

DuPont's "Telar" is a concentrate that is mixed with water. It is said to "last the life of the car" and provide full protection. One gallon at $5.00 will protect the average car's system to 5°F. Estimated makeup to compensate for various minor losses is 2-qt per yr., less with a good tight system.

An additional feature of Telar is its ability to indicate aeration and combustion gas leaks to the coolant. Its normal red color turns yellow when these conditions occur.

The World's Largest Manufacturers of
FUEL INJECTION EQUIPMENT
for Diesel Engines



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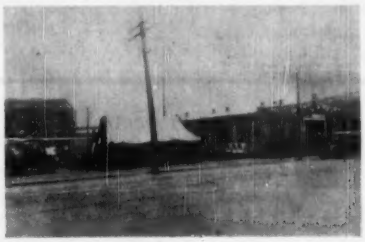
Branch Office: 3401 St. Antoine Street, Montreal 30, Quebec

AP 930



I-H Celebrating 50th Birthday

International Harvester Company's Tractor Works is celebrating its 50th anniversary of tractor production—crawlers and wheel tractors, power units and bullgrader and bulldozer blades.

I-H's Construction Equipment Division Tractor Works began in 1910 with the building of 17 friction-drive wheel tractors, fabricated partly in a tent and partly in a barn with the help of 196 employes. Today, Tractor Works consists of 33 buildings extending over an 82-acre tract and containing 1,750,000 sq ft of floor space. 5000 persons are employed.

American MARC Contracts

American MARC, Inc. has recent contracts of $1-million for its electro-dynamics and Diesel engine divisions.

AERA's Convention In Cincinnati, June 1st

"Tell'em, show'em, sell'em" is the theme of Automotive Engine Rebuilders Association's 38th Annual Convention coming up next month in Cincinnati, June 1-4.

Tentative program has already been drawn up. It's geared to give good practical information to the small shop as well as larger ones. There'll be sessions on specifics of rebuilding various components . . . sessions on how to run and how not to run shops . . . shop kinks . . . and the business end of running shops, including sales ideas, will be hit hard. There'll be sessions on new ideas in bearings . . . new ideas in break-in. And Henry Ortner of American Bosch will be talking on fuel injection equipment. AERA is inviting everybody to bring in their shop problems for discussion. Sounds like a real hot session coming up, doesn't it?

(Continued on page 47)

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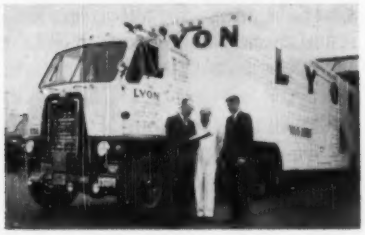
(Continued from page 44)



Lyon Vans Switching to Diesels

Trend toward diesel power in the household goods carrier field is indicated by recent addition of 25 new Cummins diesel tractors to the Lyon Van Lines fleet. Lower over-the-road costs in operating diesels has influenced Lyon's swing toward this type of tractor. International tilt-up cabs were picked. Investment represents close to $400,000. Charles G. Long, vice president and general manager of Lyon Vans, pointed out that operating rigs that travel some half million miles a month require close attention to every factor affecting costs—fuel, tires, oil and general maintenance—and that in his opinion the new diesels offer a definite saving.

"While considerable merchandise that may go into warehouses, can travel without the pressure of meeting arrival dates, this is not true in the van lines business," said Long. "We cannot afford delays. We maintain a better speed level with diesels, according to our records, and downtime is less. Service is easy with the tilt-up cab, operated by its hydraulic pump. And we find that our drivers perform best when at the wheel of top equipment which functions with greatest reliability."

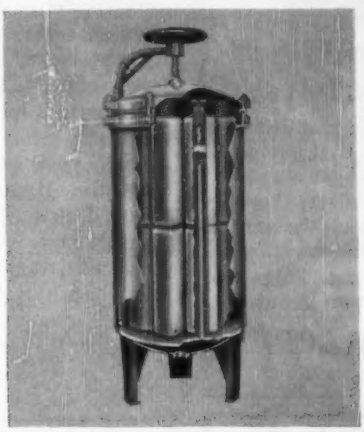
Correction

One of our alert readers—E. E. Ziemann, Equipment Engineer, GM Electro-Motive—caught a typo in the March issue of DIESEL POWER. On Page 36 of our Southern Pacific Railroad story, sentence should have read: "Maximum engine speed was raised from 800 to 830-835 rpm at No. 8 throttle on both the distillate and residual fuel units."

Robert Bosch to Make Garrett Turbos

Garrett Corporation has announced a joint licensing agreement with Robert Bosch, GmbH, world-famed manufacturer of automotive products of Stuttgart, Germany to produce and sell Garrett diesel turbochargers and related control systems. Bosch may establish production manufacturing facilities for the turbochargers and control systems in the Federal Republic of Germany, and the Republic of France, including Algeria and French African Territories. Bosch's sales area covers the free-world countries other than the U. S., Canada, United Kingdom and Eire. In England, Rotol, Ltd., of Gloucester, has been a Garrett licensee for its turbochargers over the past two years.

AiResearch turbochargers are currently sold in the United States as matching components on diesel engines developed by major engine manufacturers.



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MULTI-CARTRIDGE FILTER

This economical, versatile filter protects bearings, cylinder walls, and other finely machined parts from costly damage caused by solid abrasive contaminants . . . or from acids, gums, resins and other products of oxidation.

You have a choice of nine types of cartridges, for lube oil or fuel, for solid or soluble contaminants.

Choose from ten different models accommodating 1 to 24 cartridges.

Write for catalog of the *complete* line of CFC filters — for full-flow or by-pass filtration. Address Dept. DR.

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PLANTS IN MELROSE, MASS. AND LEBANON, IND.

OIL CONDITION INDICATING METER

REDUCE WORKLOAD ON OVERHAUL SHOP BY 1/3

A meter to avoid conditions of operation that most shorten the life of an engine. On an average, metered engines can outlast the unmetered by a good one third. Details gladly sent. Diesel? Gasoline? How many in use?

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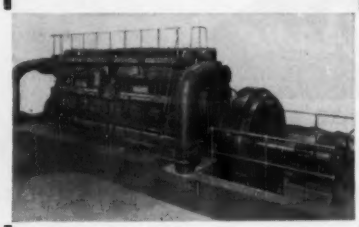
Box B, Avon, N. J.

DIESEL ENGINE GENERATOR SETS

Immediate Delivery from Inventory!



Any voltage; 50 or 60 cycle. Available in stationary, mobile or portable model. Following listing is only partial.

2000 kva Fairbanks-Morse model 33F16 (photo above)
1420 kva Fairbanks-Morse model 38D-8 1/8
1375 kva General Motors model 278A
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375 kva General Motors model 268A
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DIgby 9-4351

PEOPLE AND PLANTS . . .

(*Continued from page 17*)

Distributor Doings:

• **Stewart & Stevenson** sales, engineering and production personnel were told of significant power developments which are expected to increase sales volumes this coming year. Scene was the firm's annual sales meeting in Houston, Texas. Developments involve a new 16-cylinder Chrysler industrial gas engine which would double the present Chrysler spark-ignited gas engine horsepower range, and new spark-ignited conversions of the General Motors Series 71 Diesel line. The latter conversions would permit operation of the diesel units on gas fuel.

S&S personnel attended from Houston, Beaumont, Odessa, Lubbock, Dallas, San Antonio, Corpus Christi and San Juan. Representatives also attended from New York City and Mexico City. Dealer personnel came from Brownsville, Longview, Wichita Falls, San Antonio and New Mexico. GM Diesel Engine Division, Chrysler Corporation and other suppliers sent representatives from Detroit, Dallas, St. Paul, Minn. and Indianapolis, Ind.

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FOR THE LEADING TRUCK DIESELS

Years of proven service
Volume production on automatic machines means SAVINGS
We pass this on to the consumer
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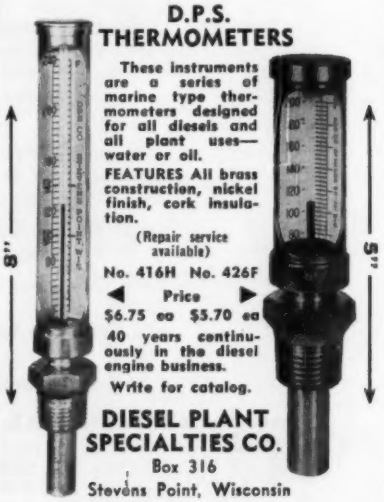
D.P.S. THERMOMETERS



These instruments are a series of marine type thermometers designed for all diesels and all plant uses—water or oil.

FEATURES All brass construction, nickel finish, cork insulation.

(Repair service available)

No. 416H No. 426F
Price
$6.75 ea $5.70 ea

40 years continuously in the diesel engine business.

Write for catalog.

DIESEL PLANT SPECIALTIES CO.
Box 316
Stevens Point, Wisconsin

• Continuous 24-hour a day road service for truckers in the Cincinnati area is now offered by **Tri-State Engine Services, Inc.** Tri-State is a brand new company just formed to handle Detroit Diesel's complete line of automotive, industrial, and marine models ranging from 20 to 1650 hp. Tri-State makes its headquarters in a new 12,000-sq ft building in Cincinnati. 10,000 sq ft of the building is devoted to service and parts, including four truck bays, a dynamometer room, and a complete fuel injector rebuilding department.

• A Month featuring used equipment values begins May 1, at **H. O. Penn Machinery Co., Inc.** and other Caterpillar dealerships across the US, according to **Godfrey Berger,** vice president of the Connecticut Division. "Without a doubt this is the customer's year for used equipment," he said. "Numbers of machines in the field is at an all-time high and is being increased daily by record numbers of new machines being shipped from the factory. Result is, good used equipment—at the right price—is available as never before in the history of machinery."

During the special month-long event, machinery bargains will be featured in Bonded Buy, Certified Buy, and "as is" categories. H. O. Penn's facilities at all five branches will be giving special emphasis to used equipment customers.

• Six additions to the executive personnel of **Cummins Service and Sales,** Los Angeles, plus several promotions and other realignment of duties, have been announced by **S. B. Cook,** Vice President.

• **Cummins Sales & Service, Inc.** distributors of Cummins Diesel Engines in the Mid-Continent region, is completing plans for a new diesel engine center to be constructed in the Great Southwest Corporation's industrial center. This new diesel

engine center will be located on ten acres of industrial property in Arlington, Texas. Scheduled for completion in August, it will be the southwest's largest diesel engine rebuild and service center. This new building will cover approximately 58,000 sq ft, divided into four major working areas: general and executive offices; engine rebuild plant; central parts warehouse; and truck service shop. Million-dollar inventory of parts and engines will be palletized here. New as well as rebuilt engines will be stocked and readily available to all Cummins Sales & Service shops as well as original equipment dealers throughout the system. This new center will enable any shop to get overnight parts delivery.

• **Abbott and Glass GM Diesel, Inc.**, of Salt Lake City has been appointed Distributor for GM Diesel Engines manufactured by the Detroit Diesel Engine Division of General Motors. The newly established Company located at 56 W. Seventh South in Salt Lake will handle GM Diesel sales, service and parts in Utah and in several neighboring counties in Nevada, Oregon, Idaho and Wyoming. A branch has also been established at 900 E. Park Blvd., in Boise, Idaho. Heading up the company is **R. G. Abbott**, president, and **E. W. Glass, Jr.**, vice president. Abbott is a former GM Diesel zone service manager and Glass was formerly an engine shop foreman of Morrison-Knudsen of Boise. Glass will head the Boise branch. **D. D. Mentzer** is service manager. **F. E. Hamilton** heads up the parts department. According to Abbott, complete servicing facilities including dynamometer test, are now available and a complete line of GM Diesel Engine Parts has been installed. Field service trucks complete with parts and fully tooled are available for day and night field service. The Salt Lake City location, 2½ blocks East of Highways 89 and 91, is convenient for cross-country truckers.

OIL CONDITION INDICATING METER

TAKES UNCERTAINTY OUT OF LUBRICATION

A meter to keep from running on oil unfit for lubrication, and to keep from draining when you shouldn't drain.

You get less wear, less labor, less downtime and use less oil.

Details free. Please state how many diesels and gasoline.

THE GERIN CORP.

Box B, Avon, N. J.

New CAT Engine

(Continued from page 27)

charging system is compact and adds little if any size and little weight to the whole engine. Yet it is responsible for substantial power increases.

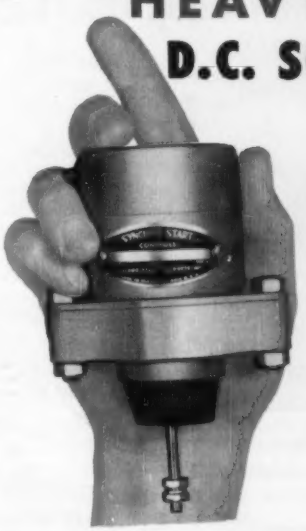
A single AiResearch turbocharger with an aftercooler is used on the 6-cyl in-line G342. Two of these turbochargers, each with a separate aftercooler, are used on the vee models. In most cases, jacket water is used as the coolant in the aftercooler. Yet their size is moderate and apparently they are effective in reducing the temperature of the air discharged from the turbocharger.

The result is a greater weight of air at lower temperature in the cylinder at the start of compression. This means more fuel can be burned completely to produce more power. Also, the lower temperature at the start of compression helps to limit maximum temperatures throughout the cycle.

Summary

With the availability of gaseous fuels at favorable prices expanding daily, spark-ignition gas engines take on more importance. Caterpillar's approach to the design of such engines was to use a heavy-duty diesel engine structure that had proved itself capable of living with higher pressures and temperatures than those anticipated with the gas engines. Output was substantially boosted through turbocharging and aftercooling yet the overall design is such that the engines can pull maximum power continuously without sacrifice in service life.

HEAVY DUTY D.C. SOLENOIDS



Voltages (D.C. only) 6V. 12V. 24V. 32V. Current Draw (pulling) 50A. 30A. 17A. 7.5A. Current Draw (holding) 1.7A. .95A. .28A. .25A.

Duty is continuous. Cycles are not to exceed 6 per minute. Pull is approximately 10 lbs. over ½ in. stroke. Weight is 2¼ lbs. Units with 1 and 1½ strokes are available.

The model SL Solenoids are ruggedly constructed and completely enclosed. They have been proven over the years, to be dependable for the operation of engine throttles, fuel pump racks, chokes, etc. Model SL Solenoids are dust and splash proof. For further information write for Bulletin 505.

SYNCHRO-START PRODUCTS, INC.
8151 N. RIDGEWAY AVENUE, SKOKIE, ILLINOIS

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Spray fast-acting LIX on dirty, oily surfaces and see why more and more diesel operators are relying on Lix to cut maintenance costs! Lix **soaks** away the dirt and grease—every bit of it. Clinging grime and ground-in grit disappear quickly . . . without any rubbing or brushing.

Because Lix Diesel Cleaners cut cleaning time to a fraction, they're far more economical than "less expensive" cleaners. There's a Lix Cleaner for every diesel-cleaning job — spray or soak-tank types . . . all harmless to all metals, low in toxicity, not fire hazards.

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- International Harvester Injection Testers
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- Injection Pump Calibrating Stands
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- Engine Overhaul Stands
- Engine Removal and Parts Dollies
- GM 71 Engine Tools

76 Pages—275 Illustrations
56 Engine Reference Tables
26 Parts Lists

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